

SCREENING SITE INSPECTION

OF

LARRY LANDRY DUMP

(LAD985169804)

SUPERFUND
FILE

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International Specialists in the Environment

PREFACE

This Screening Site Inspection Report was prepared by Ecology and Environment, Inc. for the Environmental Protection Agency under Contract Number 68-01-7347.

SCREENING SITE INSPECTION

OF

LARRY LANDRY DUMP

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1. INTRODUCTION

The Ecology and Environment, Inc. (E & E) Region VI Field Investigation Team (FIT) was tasked by the U. S. Environmental Protection Agency (EPA) under Technical Directive Document (TDD) F06-9002-14 to conduct the Screening Site Inspection (SSI) of the Larry Landry Dump site (LAD985169804) in Intracoastal City, Vermilion Parish, Louisiana.

1.1 SCREENING SITE INSPECTION OBJECTIVES

The SSI evaluates the potential risks associated with hazardous waste generation, storage and disposal at the site. It expands upon data collected during the Preliminary Assessment (PA) and identifies data gaps. Information obtained during the SSI supports the management decision of whether the site proceeds to the Listing Site Inspection (LSI) or receives the classification of No Further Action under the Superfund Amendments and Reauthorization Act (SARA).

1.2 SITE DESCRIPTION AND HISTORY

The Larry Landry Dump (LLD) is located off Louisiana Highway 333, one mile north of Intracoastal City, Vermilion Parish, Louisiana (Figures 1 and 2). The site is located on private land owned by (b) (6), who leased part of it to Mr. Larry Landry. Mr. Landry used the land as an open dump for various oil field and solid wastes from offshore drilling rigs (Ref. 6). The geographic coordinates are 29°47'52" north latitude and 92°09'03" west longitude (Figures 1 and 2).

LLD operated in the early 1980s, and ceased operations when (b) (6) raised the rent on the land (Ref. 6). Previous sampling inspections revealed high concentrations of salt, oil, grease, barium, cadmium, chromium, lead and zinc (Ref. 7, p. 1). The samples were not analyzed for organic constituents.

The site operator did not build containment structures to prevent waste migration via air, ground water or surface water routes. The waste material was indiscriminately disposed directly onto the ground (Ref. 6). The files do not contain information regarding the estimated waste quantity disposed. The FIT visually estimated that an area of approximately 20,000 square feet was used for the dumping of wastes. There are no visual signs of waste migration.

1.3 SUMMARY OF PRELIMINARY ASSESSMENT

The PA was completed by the FIT on January 2, 1990. The PA referred to piles of waste material that were disposed directly onto the ground. There were no containment structures on-site (Ref. 1, p. 4; Ref. 6).

The PA stated that the Vermilion River has been recharging the Chicot aquifer near Bancker, five miles north of the site, due to large scale ground water use for irrigation (Ref. 1, p. 4; Ref. 2, p. 21).

The PA identified the irrigation and drainage ditches surrounding the site as possible migration routes to the Vermilion River, which is a

designated primary and secondary recreation area used for propagation of fish and wildlife (Ref. 1, p. 5). Potentially sensitive environments consist of wetlands (estuarine), a state wildlife refuge, and habitats used by endangered species (Ref. 1, p. 5; Ref. 11, pp. 5-6). The PA reported a locked gate at the site with No Trespassing signs posted (Ref. 1, p. 5).

The PA stated that there are approximately 510 people within four miles of the site (Ref. 1, p. 5).

2. DATA COLLECTION

The on-site reconnaissance inspection and sampling inspection are addressed in this section.

2.1 ON-SITE RECONNAISSANCE INSPECTION

The on-site reconnaissance inspection was conducted on November 12, 1990 by FIT members Marcus A. Pinzel, Michael Mitchell and Kurt Soutendijk. During the inspection, the FIT met with (b) (6) representative, Mr. Jim Jones.

The first and second entrance gates to the site were locked and the final gate was closed, but not locked. The surrounding land is fenced-in pasture land.

The sources of contamination were salt stained soils, where much of the drilling mud may have been deposited, and piles of soil toward the eastern boundary of the site.

For health and safety purposes, the FIT team wore Level C protection, neoprene boots with rubber boot covers, tyvek coveralls and nitrile gloves. The ambient air was continuously monitored with an HNu and showed safe readings in the breathing zone.

2.2 SAMPLING INSPECTION

The sampling inspection was conducted on December 11, 1990 by FIT members Marcus A. Pinzel, Kurt Soutendijk, Greg Straughn, Christine Green, Chris Carlson and Julie Koke. Sample locations are shown in Figure 3 and described in Table 1.

Source waste characterization samples were collected from the salt stained area, which showed stressed vegetation, and the potential waste piles. The sample locations were selected to establish soil exposure levels. Samples were collected from the major areas of soil contamination.

Ground water samples were scheduled to be collected from four locations, one from a stock well screened 500 feet below ground level, one to serve as a background sample and two from samples taken with the geo probe sampling device. The FIT drilled to 20 feet in three locations, but ground water was not encountered. A stiff clay was present from the surface to 20 feet in all locations. Due to these findings, the FIT

concluded that surface water was a more likely route of migration. Surface water samples were collected as a replacement for ground water samples, per approval of changes from EPA Project Officer Bart Canellas. Ground water samples one through four were deleted and the collection of surface water samples were substituted.

The surface water objectives were to determine migration to the Vermilion River, the Intracoastal Waterway, nearby irrigation canals and site runoff pathways. The site runoff pathway objectives were met by collecting surface water and sediment samples from runoff pathways and impounded areas. The Vermilion River and Intracoastal Waterway pathways were characterized by collecting surface water and sediment samples from the irrigation ditches and runoff pathways that would flow into the river and the waterway. Air samples were not collected because volatile organics were not detected in the air by the HNu during the on-site reconnaissance inspection.

All field activities were conducted according to FIT Field Sampling Standard Operating Procedures. Organic samples were shipped to Southwest Research Institute in San Antonio, Texas and inorganic samples were shipped to Southwest Labs of Oklahoma in Broken Arrow, Oklahoma.

3. ANALYTICAL RESULTS

This section addresses the analytical results of the samples collected during the SSI. FIT chemists evaluated the data for compliance with RAS Quality Assurance/Quality Control (QA/QC) protocol. The QA/QC assessments are presented in Attachment C. Attachment D contains the sample documentation supporting the analytical results, including sample receipts, chain-of-custody documentation, traffic reports and air bills from sample shipments. The analytical data are presented in Table 2. Contaminants detected in samples collected from the migration pathways were considered to be migrating from on-site waste sources if their concentration was three times greater than background concentration, or five times the Contract Required Detection Limit (CRDL) if not detected in the background sample (Attachment B).

The surface water samples did not show any contaminants above background levels (Table 2). The soil sample with the greatest level of contamination was sample SS-8, collected from the area of stressed vegetation around Waste Pile 3. It contained high levels of arsenic (17.3 ppm), barium (12,700 ppm), cadmium (6.4 ppm), chromium (287 ppm), lead (817 ppm) and silver (6.5 ppm). The background samples were collected from soil samples 6 and 9 (Table 2).

Other contaminated samples containing similar contaminants were:

SS-1 Northwest portion of salty-stained, stressed vegetation area: 4 ppm cadmium, 295 ppm chromium and 183 ppm lead (Table 2)

SS-2 South-central portion of salty-stained, stressed vegetation area: 465 ppm chromium and 706 ppm manganese (Table 2)

SS-5 Southern Waste Pile 1: 308 ppm chromium and 81.5 ppm copper (Table 2)

SS-7 Northeastern Waste Pile 2: 7.5 ppm arsenic, 3.9 ppm cadmium, 127 ppm chromium and 241 ppm lead (Table 2)

SS-10 North end of site along canal bordering site boundary: 345 ppm chromium and 744 ppm manganese (Table 2)

The air pathway was not evaluated because of lack of population and sensitive environments.

4. SOURCE WASTE CHARACTERISTICS, PATHWAYS AND TARGETS

Source waste characteristics, and the ground water, surface water, soil exposure and air pathways and targets are addressed in this section.

4.1 SOURCE WASTE CHARACTERISTICS

The FIT identified as waste sources the contaminated soils covering a large central area of the site and three waste piles toward the eastern edge of the site (Figure 3) (Table 3). The FIT measured the waste source dimensions during the SSI. The waste quantities at the site consist of the salt-stained area at approximately 14,000 square feet, Waste Pile #1 at 66 square feet, Waste Pile #2 at 480 square feet and Waste Pile #3 at 120 square feet. There are no on-site containment structures, including liners, present for any of the four waste sources. The contaminants detected at each source were arsenic, barium, beryllium, cadmium, chromium, lead and vanadium (Figure 3) (Tables 2 and 3). Source waste characterization samples were collected from the stressed vegetation and salt-stained area, the three waste piles, and along irrigation ditches.

4.2 GROUND WATER PATHWAY

The Chicot aquifer system consists mostly of thick sand and gravel deposits that dip and thicken southward from southern Vernon and Rapides Parishes. The aquifer thins slightly to the west and continues into Texas. To the east, the aquifer thickens toward the axis of the Mississippi Embayment trough, where it is cut or overlain by the alluvium of the Atchafalaya and Mississippi rivers; thus, the Chicot aquifer system and Atchafalaya aquifer are hydraulically connected (Ref. 2, p. 4). East of Calcasieu Parish, the massive sand of the Chicot aquifer system has been divided into two units called the upper sand and the lower sand. The upper sand is connected to the Abbeville Unit (Ref. 2, p. 4). This shallow sand (Abbeville Unit) is a distinct hydrologic unit throughout most of the lower Vermilion River Basin. The thickness of sand usually ranges from 100 to 250 feet (Ref. 2, p. 21). Due to large scale ground water use for irrigation, the Vermilion River has been recharging the Chicot aquifer near Bancker, five miles north of the site (Ref. 1, p. 4; Ref. 2, p. 21).

A geohydrologic cross section of the site's location revealed that LLD is underlain by 200 feet of clay. Underlying the clay are 150 feet of freshwater sand. This is the Abbeville Unit (Ref. 2, pp. 27-28).

The approximately 582 persons in the four mile radius use purchased drinking water only. The well water is for cooking, bathing and irrigation purposes only (Ref. 1, pp. 7-8). The nearest well is approximately 2,200 feet east of the site. It is owned by (b) (6) who stated that her well was dug in 1975 and is at a 500 foot depth (Ref. 1, p. 7; Ref. 10; Ref. 12). A net precipitation of 21.02 inches has been determined (Ref. 3).

4.3 SURFACE WATER PATHWAY

The site is surrounded by surface water (Attachment A, Photographs 1, 3, 4, 6, 8, 9, 10, 12). There are approximately 15,216 square feet of contaminated soil on-site (Tables 2 and 3) (Attachment A). Waste disposal areas are not contained and there is no evidence of a run-on or runoff control system (Attachment A, Photographs 1, 3, 4, 6, 8, 9, 10, 12) (Ref. 6). Site drainage flows into a north-south ditch that parallels the access road. The drainage ditch empties into an east-west ditch, which in turn enters the Vermilion River approximately one-half mile downstream. The Vermilion River is the next five miles of the 15 mile segment. The final nine miles of the surface water pathway are in Vermilion Bay (Ref. 12). The site is in the 100 year floodplain (Ref. 4).

A wetlands map of the area around the site does not exist, but most of the area, particularly near the canals, is marsh and freshwater wetlands (Ref. 5; Ref. 15). Approximately 10 miles of wetlands are located in the 15 mile stream segment along the Vermilion River. A state wildlife refuge and habitats are located approximately eight miles south of the site along the Vermilion Bay, and are used by the Peregrine Falcon (Falco peregrinus anatum) and Atlantic Ridley Turtle (Lepidochelys kempii) in coastal Vermilion Parish at certain times of the year (Ref. 1, p. 5; Ref. 11).

There are no known drinking water intakes along the Vermilion River. The Vermilion River is designated as usable for primary and secondary recreation and for propagation of fish and wildlife (Ref. 9, pp. 96, 118). Crawfish is a major aquatic food resource within the target distance of the site. Crawfish are raised in rice fields which are flooded from the canals. A crawfish farm in Vermilion Parish can produce up to 2,000 pounds per acre per year, and averages approximately 800 pounds (Ref. 13). There are approximately 7,465 acres of potential crawfish farmlands within a four mile radius of the site (Table 4) (Ref. 12). A radial distance for potential human food chain production was used because tidal reversal of the Vermilion River has been recorded as far upstream as Lafayette (Ref. 16). Fishing and crabbing take place along the Vermilion River, Intracoastal Waterway and Vermilion Bay, encompassing the 15 stream mile distance. The area is used regularly for fishing, but the amount of fish caught annually cannot be determined (Ref. 14).

4.4 SOIL EXPOSURE PATHWAY

During the on-site reconnaissance inspection, the site was enclosed behind three barbed wire fences and three gates, two of which were locked. There are approximately 15,200 square feet of contaminated soil on-site (Table 3) (Attachment A). The nearest residence borders the east side of the site. The population within one mile is approximately 141, according to a house count (Table 5) (Ref. 4; Ref. 12). The nearest residence is approximately 2,200 feet east of the site (Ref. 12). There are no on-site employees. There are no known terrestrial sensitive environments on-site. The Peregrine Falcon and the Atlantic Ridley Turtle use the coastal areas of Vermilion Parish as a refuge and habitat (Ref. 11). The area surrounding the site is sparsely populated and there are no known recreational uses of the site (Ref. 12) (Attachment A).

4.5 AIR PATHWAY

There is no known release of site contaminants to the air pathway. No volatile compounds were detected in any of the samples collected during the SSI (Table 1). Heavy metals detected in the soil samples include arsenic, barium, cadmium, chromium, lead, silver, copper, manganese and mercury (Table 1). Particulate migration from the soil are expected to be low due to the heavy rainfall in southern Louisiana (Ref. 3), but during the dry summer periods, particulate migration of contaminants is a potential route of concern.

Wastes are found above-ground in three separate piles and are exposed to the air, as well as a large salt-stained, non-vegetated area (Table 3). The LLD is not in operation and has no on-site workers (Ref. 6). The nearest residence is approximately 2,200 feet east of the site (Figure 1) (Ref. 12). The Peregrine Falcon and the Atlantic Ridley Turtle use the coastal area in Vermilion Parish as a refuge and habitat (Ref. 11). According to topographic maps, there are an estimated 3,640 acres of wetlands within a four mile radius of the site (Ref. 12; Ref. 15). The population within four miles of the site is estimated at 582, according to a house count (Table 5) (Ref. 5; Ref. 12).

5. PROJECT MANAGEMENT

Key personnel and community relations are addressed in this section.

5.1 KEY PERSONNEL

The FIT Project Manager for this investigation was Marcus A. Pinzel. The Project Manager was responsible for obtaining site access, and for the overall planning, management and implementation of site activities. Kurt Soutendijk served as Site Safety Officer, which involved the development and implementation of the Site Safety Plan.

The EPA Region VI Project Officer for this investigation was Bartolome J. Cannellas.

5.2 COMMUNITY RELATIONS

Persons requesting site information will be instructed to submit a Freedom of Information Act Request to: Freedom of Information Officer, U.S. EPA Region VI, 1445 Ross Avenue, Dallas, Texas 75202-2733. Reporters will be instructed to contact the Office of External Affairs at 214/655-2200.

6. CONCLUSIONS

The Larry Landry Dump is owned by (b) (6), and was leased to Mr. Larry Landry in the early 1980s as a dump site for various oil field and offshore drilling rig solid wastes.

The sources of on-site wastes are contaminated soil and three waste piles. There are no containment structures, berms or liners in evidence.

Analytical results of the samples collected from the site revealed elevated concentrations of metals such as lead, chromium and arsenic. The ground water samples were not collected because of lack of ground water usage and the depth to ground water.

The primary pathway of concern is the surface water pathway. Any wastes migrating to the surface water could potentially enter irrigation canals used to flood crawfish farms in the area. Samples collected during the SSI did not show migration of wastes to surface water.

The soil exposure pathway is not considered a major pathway of concern because there is no on-site target population, and because site is not accessible to the public.

The air pathway is considered a minor pathway of concern because there is no known release of contaminants from the sources, and because particulate migration would be low due to heavy rainfall.

REFERENCES

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- 3 Letter. HRS Net Precipitation Values. From: Andrew M. Platt, Group Leader, Hazardous Waste Systems, The MITRE Corporation. To: Ms. Lucy Sibold, EPA, Washington, District of Columbia. May 26, 1988.
- 4 Record of Communication. Flood Potential and U.S. Census Factors. From: Thomas A. Lensing, Jr., FIT Biologist, Ecology and Environment, Inc. To: Richard Minuielle, Sellers Dubroc and Associates, Abbeville, Louisiana. November 28, 1989. LAD985169804.
- 5 Record of Communication. Land Use and Soil Types in the Area of Larry Landry Dump. From: Thomas A. Lensing, Jr., FIT Biologist, Ecology and Environment, Inc. To: Elray Shexnaider, J.E. Shexnaider and Associates, Abbeville, Louisiana. December 4, 1989. LAD985169804.
- 6 Record of Communication. Larry Landry Dump. From: Thomas A. Lensing, Jr., FIT Biologist, Ecology and Environment, Inc. To: (b) (6) and Paul Conzelmann. November 14, 1989. LAD985169804.
- 7 Letter. Larry Landry Dump. From: Wilma Subra, President, Subra Company. To: (b) (6), Abbeville, Louisiana. August 17, 1984.
- 8 Memorandum. Sole Source Aquifers. From: Deborah A. Vaughn-Wright, Region 6 NPL Coordinator, EPA. To: Ed Sierra, FIT RPO, EPA. November 21, 1989.
- 9 Louisiana Department of Environmental Quality, Office of Water Resources. Initial Draft. Louisiana Water Control Regulations. March 9, 1984.
- 10 Record of Communication. Ground Water Well. From: Christine Green, FIT Geologist, Ecology and Environment, Inc. To: Mrs. (b) (6) December 11, 1990. LAD985169804.
- 11 Watson, M.B. Threatened and Endangered Animals of Louisiana. Louisiana Department of Wildlife and Fisheries. 1981.

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- 14 Record of Communication. Fishing in Intracoastal and Other Canals in the Kaplan Area. From: Douglas Crist, FIT Geologist, Ecology and Environment, Inc. To: Carol Perry, Kaplan Area Chamber of Commerce. June 20, 1991. LAD985169804.
- 15 Record of Communication. Wetlands Along Vermilion River in Vermilion Parish Near LLD. From: Marcus A. Pinzel, FIT Geologist, Ecology and Environment, Inc. To: Charles Stores, Regional Wetland Coordinator, U.S. Fish and Wildlife Service. September 19, 1991. LAD985169804.
- 16 Record of Communication. Vermilion River Flow Direction. From: Raymond Wayne, FIT Hydrologist, Ecology and Environment, Inc. To: L. J. Danton, Hydro Technician, U. S. Geological Survey, Baton Rouge, Louisiana. July 14, 1988. LAD985169804.

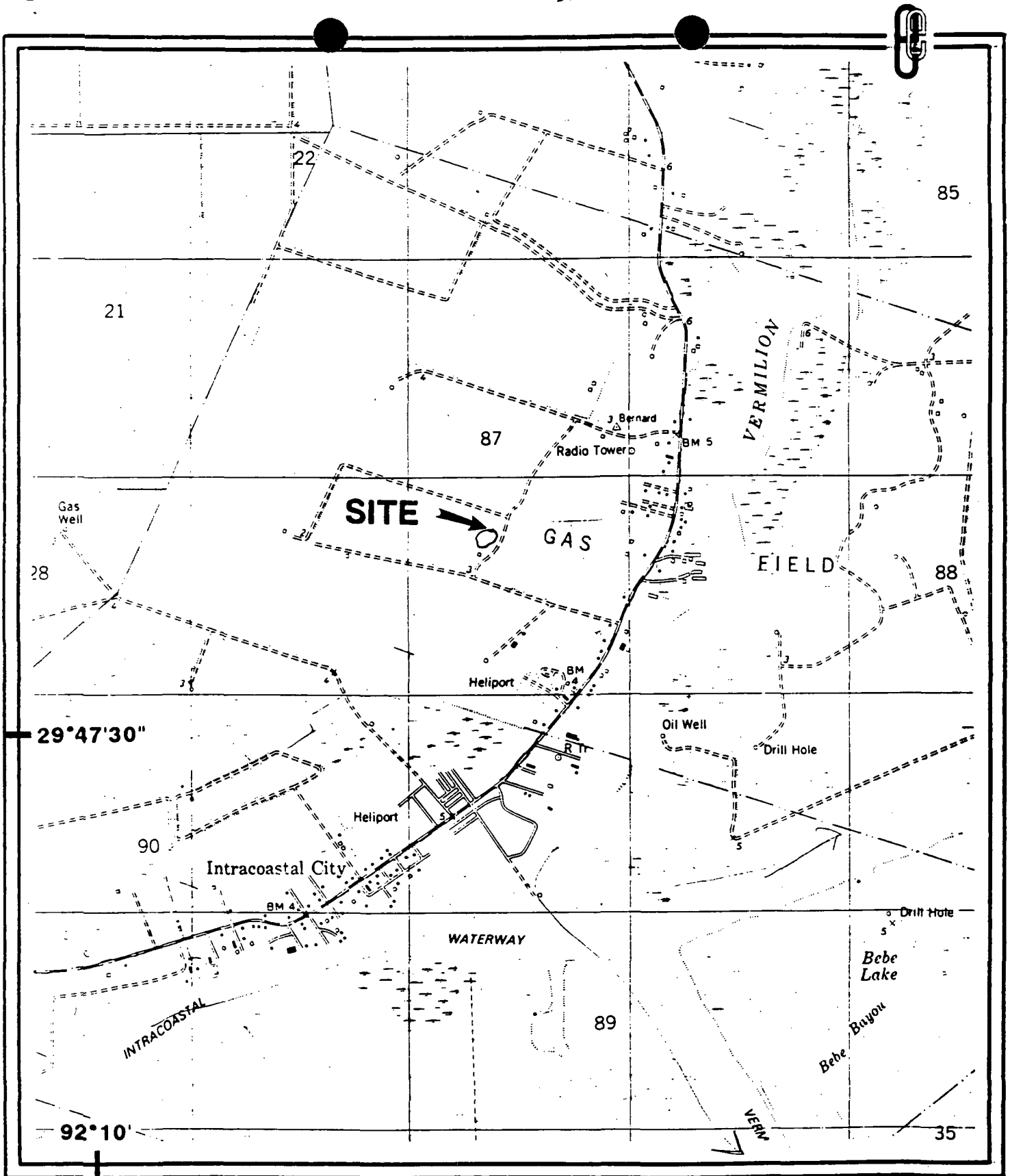
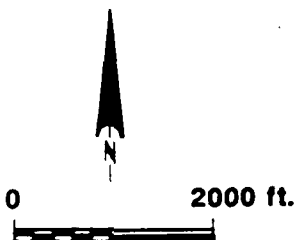


FIGURE 1
 SITE LOCATION MAP
 LARRY LANDRY DUMP
 INTRACOASTAL CITY, LOUISIANA
 LAD985169804



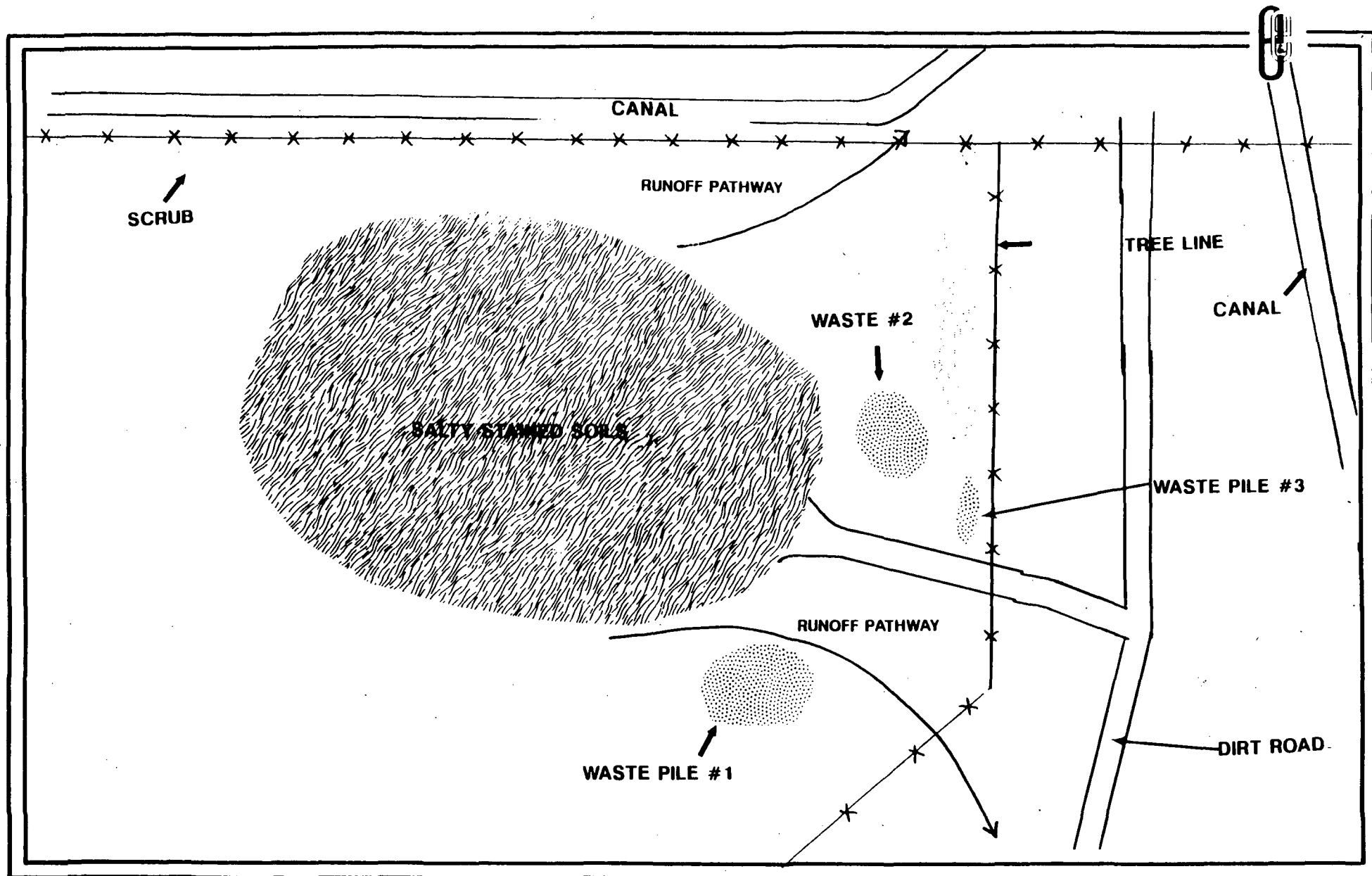
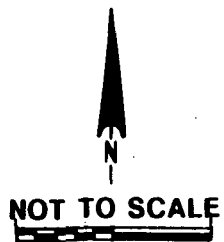
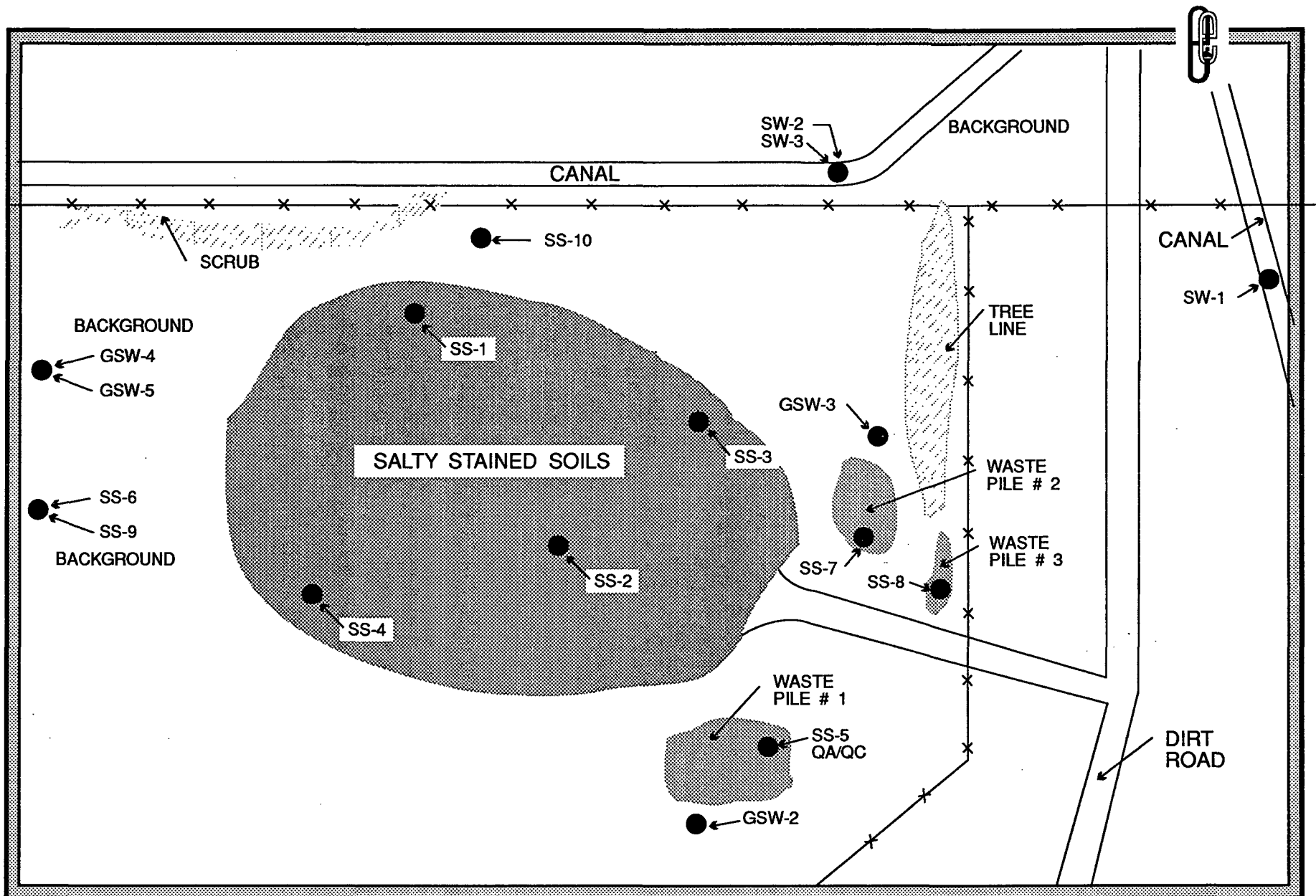


FIGURE 2
SITE SKETCH
LARRY LANDRY DUMP
INTRACOASTAL CITY, LOUISIANA
LAD985169804





FO372.CDR

FIGURE 3
SAMPLE LOCATIONS
 LARRY LANDRY DUMP
 INTRACOASTAL CITY, LOUISIANA
 LAD985169804

Not To Scale

TABLE 1

SAMPLE DESCRIPTIONS

<u>Sample No.</u>	<u>Sample Type</u>	<u>Sample Location</u>	<u>HRS Rationale</u>
SS-1	soil: 0-6" interval	North salt stain	Surface Water Pathway
SS-2	soil: 0-6" interval	South salt stain	Surface Water Pathway
SS-3	soil: 0-6" interval	East salt stain	Surface Water Pathway
SS-4	soil: 0-6" interval	West salt stain	Surface Water Pathway
SS-5	soil: 0-6" interval	South pile	Surface Water Pathway
SS-6	soil: 0-6"		
	duplicate of SS-9	Same as SS-9	Surface Water Pathway
SS-7	soil: 0-6" interval	North pile	Surface Water Pathway
SS-8	soil: 0-6" interval	Fence pile	Surface Water Pathway
SS-9	soil: 0-6"		
	(Background)	Far West	Surface Water Pathway
SS-10	soil: 0-6" interval	North canal	Surface Water Pathway
GSW-2	surface water	Geo south	Surface Water Pathway
GSW-3	surface water	Geo north	Surface Water Pathway
GSW-4	surface water	Geo for west	Surface Water Pathway
GSW-5	surface water	Same as GSW-4	Surface Water Pathway
SW-1	surface water	Lower canal	Surface Water Pathway
SW-2	surface water		
	(background)	Upper canal	Surface Water Pathway
SW-3	surface water	Same as SW-2	Surface Water Pathway
TB-1	trip blank		

TABLE 2

ANALYTICAL RESULTS

Contaminant	SS-1	SS-2	SS-3	SS-4
Aluminum	7,130	11,600	7,740	7,470
Antimony	----	----	----	----
Arsenic	6.1	1.4	0.96	2.5
Barium	7,160	9,180	857	694
Beryllium	0.53	0.67	0.4	0.56
Cadmium	4.0	1.5	0.93	----
Calcium	7,610	38,400	2,730	2,090
Chromium	295	465	19.1	17.3
Cobalt	13.1	13.9	2.3	4.2
Copper	47.6	28.1	44.7	13.2
Iron	13,200	10,400	5,700	7,240
Lead	183	112	22.8	20.9
Magnesium	1,010	3,630	367	1,290
Manganese	371	706	35	169
Mercury	1.6	0.99	0.61	0.16
Nickel	8.6	8.6	3.6	6.3
Potassium	1,050	1,910	669	1,000
Silver	1.7	0.93	0.84	----
Sodium	2,720	21,300	1,620	404
Thallium	----	----	----	----
Vanadium	15.4	12.7	8.9	11.2
Zinc	----	----	----	----
Acetone	0.045	0.036	----	----
Toluene	0.008	0.006	----	----
Phenol		----	1.7	----

Concentrations in parts per million (ppm)

TABLE 2 (continued)

Contaminant	SS-5	SS-6 (bkgd)	SS-7	SS-8
Aluminum	11,600	13,100	7,300	11,100
Antimony	----	----	----	----
Arsenic	5.4	3.0	7.5	17.3
Barium	7,580	2,370	7,530	12,700
Beryllium	0.68	0.62	0.49	0.48
Cadmium	2.60	0.96	3.9	6.4
Calcium	36,500	1,890	90,300	4,200
Chromium	308	25	127	287
Cobalt	16.1	6.5	14.0	19.1
Copper	81.5	26.7	44.0	70.1
Iron	16,500	12,300	13,000	16,200
Lead	134	50.1	241	817
Magnesium	2,310	1,400	2,040	1,800
Manganese	492	199	444	347
Mercury	1.1	----	1.7	1.4
Nickel	15.2	9.9	9.4	13.6
Potassium	1,260	1,570	759	1,330
Silver	1.4	1.2	1.9	6.5
Sodium	510	3,540	1,710	363
Thallium	----	----	----	----
Vanadium	19.6	18.3	12.8	17.7
Zinc	----	----	----	----
Acetone	----	----	----	----
Toluene	----	----	----	----
Phenol	----	----	----	----

Concentrations in parts per million (ppm)

TABLE 2 (continued)

Contaminant	SS-9 (bkgd)	SS-10	GSW-2	GSW-3	GSW-4 (bkgd)
Aluminum	6,620	10,300	0.084	0.049	0.445
Antimony	----	----	----	----	----
Arsenic	2.4	5.8	----	----	----
Barium	3,950	3,460	0.28	0.023	0.41
Beryllium	0.39	0.68	----	----	----
Cadmium	----	1.5	----	----	----
Calcium	1,650	2,050	51.40	50.5	134.0
Chromium	30.8	345	----	----	0.05
Cobalt	7.7	11.5	0.007	0.005	0.01
Copper	18.1	38.5	----	----	0.01
Iron	7,720	15,900	0.31	0.27	2.75
Lead	46.1	118	----	0.004	0.012
Magnesium	911	1,290	46.7	42.1	38.5
Manganese	163	744	0.10	0.183	2.81
Mercury	1.2	0.24	0.0002	0.0005	----
Nickel	4.2	12.7	----	----	----
Potassium	803	1,020	17.9	15.6	50.8
Silver	----	1.6	----	----	----
Sodium	4,750	234	331.0	296.0	371.0
Thallium	----	----	----	----	----
Vanadium	11.4	20	----	----	----
Zinc	----	----	0.011	0.06	0.51
Acetone	----	----	----	----	----
Toluene	----	----	----	----	----
Phenol	----	----	----	----	----

Concentrations in parts per million (ppm)

TABLE 2 (continued)

Contaminant	GSW-5 (bkgd)	SW-1	SW-2	SW-3
Aluminum	----	0.198	0.087	0.079
Antimony	----	----	----	----
Arsenic	----	----	----	----
Barium	0.299	0.214	0.275	0.281
Beryllium	----	----	----	----
Cadmium	----	----	----	----
Calcium	77.3	47.8	61.3	62.1
Chromium	----	----	----	----
Cobalt	----	----	----	----
Copper	----	----	----	----
Iron	0.15	0.243	0.421	0.41
Lead	----	0.0022	----	----
Magnesium	41.8	38.2	39.1	38.9
Manganese	0.13	0.0798	0.276	0.294
Mercury	----	----	0.0006	----
Nickel	----	----	----	----
Potassium	3.3	5.57	3.37	3.67
Silver	----	----	----	----
Sodium	220.0	227.0	216.0	214.0
Thallium	----	----	----	----
Vanadium	----	----	----	----
Zinc	----	0.012	0.018	----

Concentrations in parts per million (ppm)

TABLE 3

SOURCE DESCRIPTIONS

A. Salt Stained Area

Location - Covers majority of site, with salt-stained and stressed vegetation in evidence. No containment or liner in evidence.

Wastes - Contaminated Soil (approx.) $140' \times 100' = 14,000 \text{ ft}^2$

B. Waste Pile #1

Location - Southeast of salt-stained soils, irregular mounds of debris and stained soils showing stressed vegetation.

Wastes - Waste pile (approx.) $28' \times 22' = 616 \text{ ft}^2$

C. Waste Pile #2

Location - East of salt-stained soils, irregular mounds of debris and stained soils showing stressed vegetation.

Wastes - Waste pile (approx.) $24' \times 20' = 480 \text{ ft}^2$

D. Waste Pile #3

Location - East of salt-stained soils, near fence, irregular mounds of debris and stained soils showing stressed vegetation.

Wastes - Waste pile (approx.) $12' \times 10' = 120 \text{ ft}^2$

TOTAL $15,216 \text{ ft}^2$

TABLE 4

CRAWFISH PRODUCTION

1 mile = 2.5 inches
1 square mile = 6.25 square inches
1 square mile = 640 acres
6.25 square inches = 640 acres
 $\text{Acres/inches}^2 = 640/6.25 = 102.4$

<u>Distance</u>	<u>Inches</u> ²	<u>Acres</u>
0 - 1	15.4	1,576.9
1 - 2	26.2	2,682.8
2 - 3	19.1	1,955.8
3 - 4	12.2	1,249.3
<u>TOTAL</u>		<u>≈7,465</u>

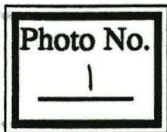
TABLE 5

POPULATION

<u>Distance</u>	<u>Number of Houses</u>	<u>Population/House</u>	<u>Population</u>
0 - 1/4	5	x 2.98	15
1/4 - 1/2	24	x 2.98	72
1/2 - 1	18	x 2.98	54
1 - 2	65	x 2.98	194
2 - 3	43	x 2.98	128
3 - 4	40	x 2.98	119
			<hr/>
		TOTAL	582

ATTACHMENT A

PHOTOGRAPHS



Site Name:

Larry Landry
Landfill

Location:

Intracoastal
City, LA

CERCLIS #:

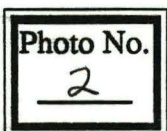
LAD985169804



Photographer/Witness Soutendijk/ Straughn

Date 2/6/91 Time 10:00 Direction East

Description GGW-3 in reference to
front gate



Photographer/Witness Soutendijk/ Straughn

Date 2/6/91 Time 10:10 Direction North

Description GGW-3

Page 1

Of 6



Photo No.

3

Site Name:

Larry Landry
Landfill

Location:

Intracoastal
City

CERCLIS #:

LAD985169804



Photographer/Witness Soutendijk/Straughm

Date 2/6/91 Time 10:20

Direction North

Description GGW-5 in reference
to radio tower

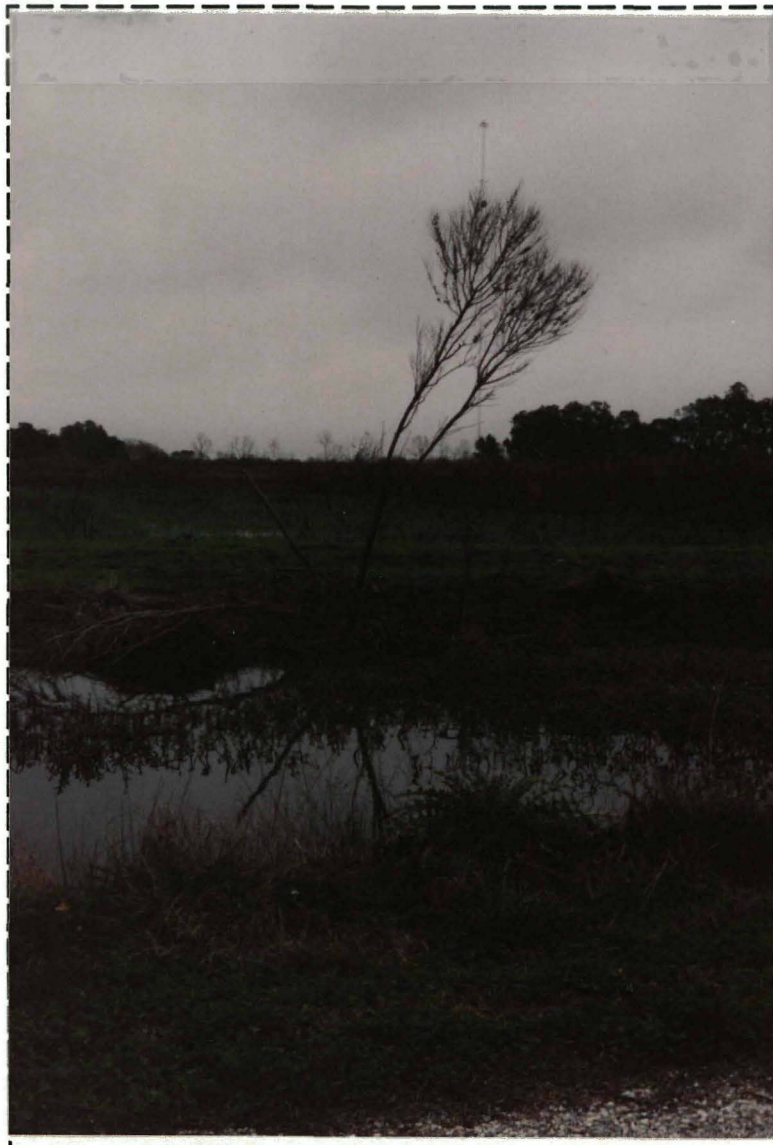


Photographer/Witness Soutendijk/Straughm

Date 2/6/91 Time 10:20

Direction North

Description GGW-5 in reference
to radio tower



Page 2

Of 6

Photo No.

4



Photo No.

5

Site Name:

Larry Landry
Landfill

Location:

Intracoastal
City, LA

CERCLIS #:

LAD98S169804



Photographer/Witness Soutendijk / Straughn

Date 2/6/91 Time 10:50 Direction North

Description SW-1

Photo No.

6



Photographer/Witness Soutendijk / Straughn

Date 2/6/91 Time 10:50 Direction North

Description SW-1 in reference to wooden
gate

Page 3

Of 6



Photo No.

7

Site Name:

Larry Landry
Landfill

Location:

Intracoastal
City, LA

CERCLIS #:

LA.D985169804



Photographer/Witness Soutendijk / Straughn

Date 2/6/91 Time 11:20 Direction North

Description SW-2 and SW-3

Photo No.

8



Photographer/Witness Soutendijk / Straughn

Date 2/6/91 Time 11:20 Direction East

Description SW-2 and SW-3 in reference
to white gate

Page 4

Of 6



Site Larry Landry Landfill
Location Intracoastal City, LA
CERCLIS # LAD985169804

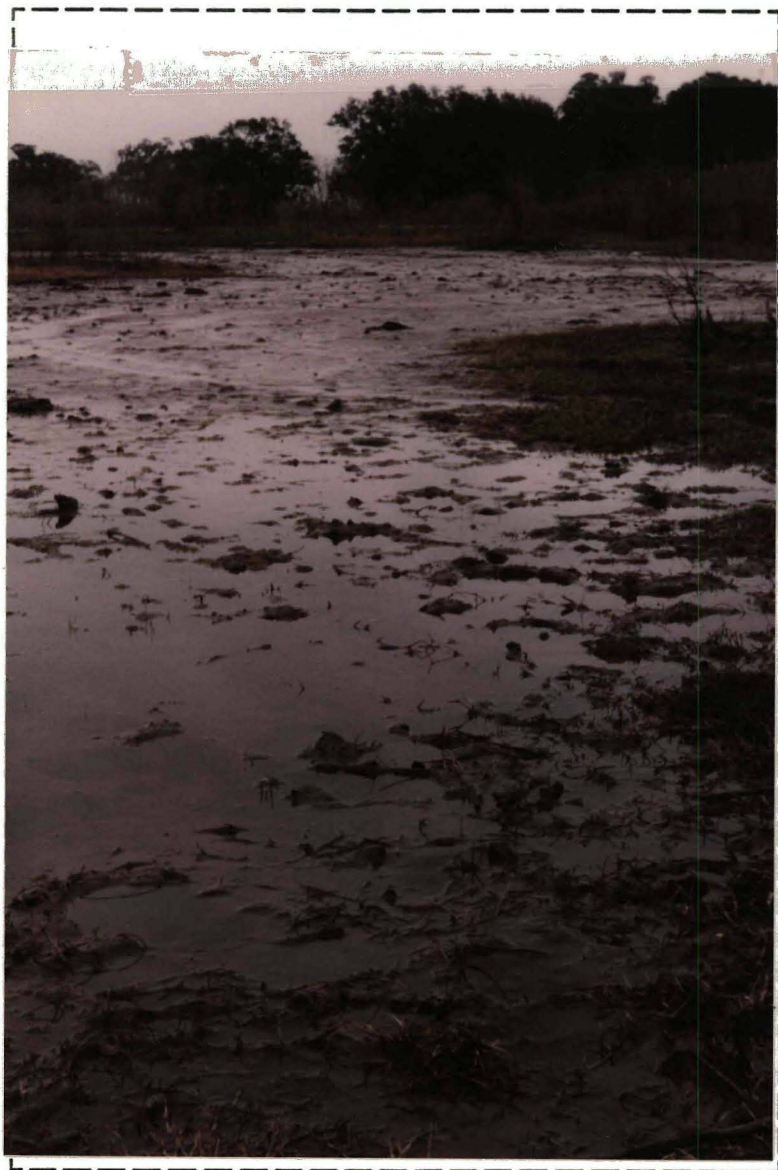


Photo No.
9

Photographer/Witness Sautendijk/Strawh
Date 2/6/91 Time 10:40
Direction East
Description GGW-4



Photo No.
10

Photographer/Witness Sautendijk/Strawh
Date 2/6/91 Time 10:40
Direction North
Description GGW-4



Photo No.

11

Site Name:

Larry Landry
Landfill

Location:

Intracoastal
City, LA

CERCLIS #:

LAD985169804



Photographer/Witness Sautendijk/Straughm

Date 2/6/91 Time 10:40

Direction South

Description GGW-2



Photographer/Witness Sautendijk/Straughm

Date 2/6/91 Time 10:40

Direction North

Description GGW-2

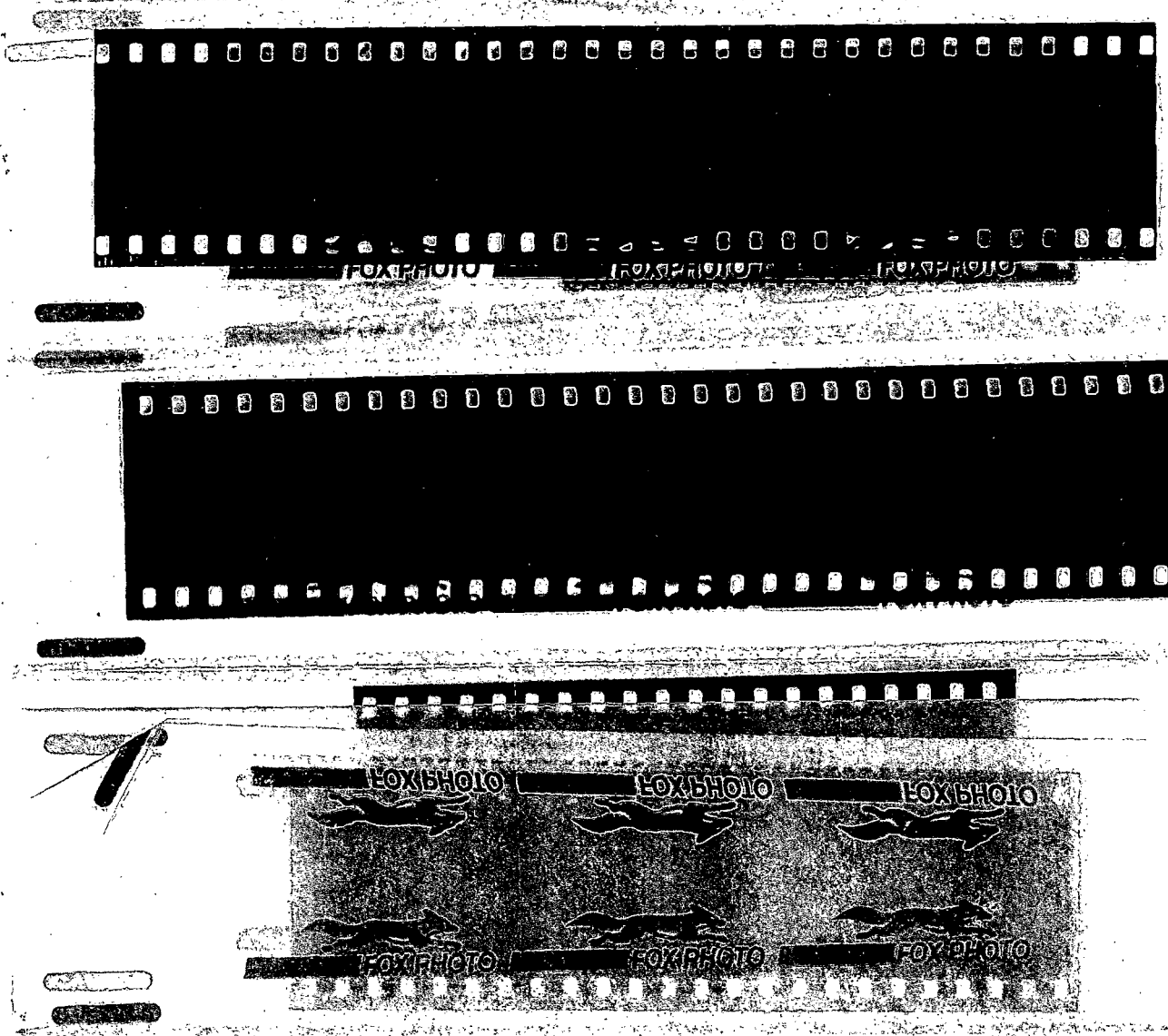


Page 6

Of 6

Photo No.

12



Larry Landry Dump
Intracoastal City, LA
LAD 985170158

ATTACHMENT B
ANALYTICAL DATA

Chemical Data Summary

SITE NAME AND CODE: LARRY LANDRY DUMP LAD985169804

CASE NUMBER: 15522

Page 1 of 3

CONCENTRATIONS IN PARTS PER MILLION (mg/kg)

Compiled by: Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Traffic Number	FLA562/MFK888	FL564/MFK890	FL568/MFK894	FL570/MFK896	FL571/MFK897	FL572/MFK898	FL573/MFK899	FL574/MFK900	FL575/MFK901	FL576/MFK902												
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL												
Percent Moisture	24/26.0	20/23.1	20/21.9	18/20.2	15/18.1	27/28.9	22/23.7	16/14.7	23/23.4	18/17.7												
Location	SS-6	SS-5	SS-3	SS-10	SS-4	SS-8	SS-9	SS-7	SS-1	SS-2												
And/Or	FAR OUT from Center	SOUTH PILE	EAST SALT	NORTH CANAL	WEST SALT	FENCE PILE	FAR WEST	NORTH PILE	NORTH SALT	SOUTH SALT												
Sample			STAIN		STAIN				STAIN	STAIN												
Description		5		10				7	1	2												
Compound Name	CAS/SCAN	CLASS																				
ALUMINUM	7429-90-5	IND	13100	J	11600	J	7740	J	10300	J	7470	J	11100	J	6220	J	7300	J	7130	J	11600	J
ANTIMONY	7440-36-0	IND		R		R		R		R		R		R		R		R		R		R
ARSENIC	7440-38-2	IND	3	J	5.4	J	0.96	J	5.8	J	2.5	J	17.3	J	2.4	J	7.5	J	6.1	J	1.4	J
BARIUM	7440-39-3	IND	2370	J	7580	J	857	J	3460	J	694	J	12700	J	3950	st J	7530	J	7160	J	9180	J
BERYLLIUM	7440-41-7	IND	0.62		0.68		0.4		0.68		0.56		0.48		.39		0.49		0.53		0.67	
CADMIUM	7440-43-9	IND	0.96		2.60		0.93		1.50				6.4				3.9		4		1.5	
CALCIUM	7440-47-2	IND	1890	J	36500	J	2730	J	2050	J	2090	J	4200	J	1650	J	90300	J	7610	J	38400	J
CHROMIUM	7440-47-3	IND	25		308		19.1		345		17.3		287		30.80	st	127		295		465	
COBALT	7440-48-4	IND	6.5		16.1		2.3		11.5		4.2		19.1		7.7		14		13.1		13.9	
COPPER	7440-50-8	IND	26.7		81.5		44.7		38.50		13.2		70.10		18.1		44		47.6		28.1	
IRON	7439-89-6	IND	12300	J	16500	J	5700	J	15900	J	7240	J	16200	J	7720	J	13000	J	13200	J	10400	J
LEAD	7439-92-1	IND	50.10	J	134	J	22.80	J	118	J	20.90	J	817	J	46.1	st J	241	J	183	J	112	J
MAGNESIUM	7439-95-4	IND	1400	J	2310	J	367	J	1290	J	1290	J	1800	J	911	J	2040	J	1010	J	3630	J
MANGANESE	7439-96-5	IND	199	J	492	J	35	J	744	J	169	J	347	J	163	st J	444	J	371	J	706	J
MERCURY	7439-97-6	IND			1.1		0.61		0.24		0.16	1114	1.4	112+	1.2	st 1114	1.7	1114	1.6		0.99	
NICKEL	7440-02-0	IND	9.90		15.2		3.6		12.7		6.30		13.6		4.2		9.4		8.6		8.6	
POTASSIUM	7440-09-7	IND	1570		1260		669		1020		1000		1330		803		759		1050		1910	
SILVER	7440-22-4	IND	1.2	J	1.4	J	0.84	J	1.6	J			6.5	J			1.9	J	1.7	J	0.93	J
SODIUM	7440-23-5	IND	3540		510		1620		234		404		363		4750		1710		2720		21300	
THALLIUM	7440-28-0	IND		R		R		R		R		R		R		R		R		R		R
VANADIUM	7440-62-2	IND	18.3		19.6		8.9		20		11.2		17.7		11.4		12.8		15.40		12.7	
ZINC	7440-66-6	IND		R		R		R		R		R		R		R		R		R		R
ACETONE	67-64-1	VOA/1	0.02500	JB	0.01700	JB	0.25000	JB	0.10000	JB	0.06700	JB	0.02300	JB	0.03100	JB	0.01900	JB	0.04500	JB	0.03600	JB
CARBON DISULFIDE	75-15-0	VOA/1																	0.03000			
TOLUENE	108-88-3	VOA/1					0.01500	JB	0.00900	B	0.00900	B			0.00400	BJ	0.00300	BJ	0.00800	B	0.00600	JB
PHENOL	108-95-2	ABN/1					1.70000															
UNKNOWN	13.07	VOA/2			0.03000	J																
ACETONITRILE	14.93	VOA/2					0.06000	BJ														
ACETONITRILE	15.13	VOA/2							0.02000	BJ												
ACETONITRILE	15.17	VOA/2	0.20000	BJ																		
ACETONITRILE	15.23	VOA/2			0.07000	BJ																
ACETONITRILE	15.27	VOA/2													0.01000	BJ						
ACETONITRILE	15.40	VOA/2											0.06000	BJ								
UNKNOWN	16.40	VOA/2																	0.01000	J		
UNKNOWN	16.53	VOA/2																	0.01000	J		
UNKNOWN	17.77	ABN/2	4.00000	J																		
UNKNOWN	18.80	ABN/2	1.00000	J																		
UNKNOWN	19.90	ABN/2	1.00000	J																		
UNSPECIFIED ALKANE	27.30	ABN/2	0.40000	J																		
UNSPECIFIED ALKANE	28.90	ABN/2	0.80000	J																		

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB INO - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)
 2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOLSTON LABORATORY ANALYTE X - OTHER ANALYTE
 J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) C - MS CONFIRMATION
 R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

Chemical Data Summary

SITE NAME AND CODE: LARRY LANDRY DUMP LAD985169804

CASE NUMBER: 15522

Page 2 of 3

CONCENTRATIONS IN PARTS PER MILLION (mg/kg)

Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Traffic Number	FL4562/MFK888	FL564/MFK890	FL568/MFK894	FL570/MFK896	FL571/MFK897	FL572/MFK898	FL573/MFK899	FL574/MFK900	FL575/MFK901	FL576/MFK902
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Percent Moisture	24/26.0	20/23.1	20/21.9	18/20.2	15/18.1	27/28.9	22/23.7	16/14.7	23/23.4	18/17.7
Location	SS-6	SS-5	GSS-3	GSS-10	GSS-4	SS-8	SS-9	SS-7	GSS-1	GSS-2
And/Dr	FAR OUT	SOUTH PILE	EAST SALT	NORTH CANAL	WEST SALT	FENCE PILE	FAR WEST	NORTH PILE	NORTH SALT	SOUTH SALT
Sample			STAIN		STAIN				STAIN	STAIN
Description										
Compound Name	CAS/SCAN	CLASS								
UNSPECIFIED ALKANE	130.93	ABN/2	0.80000	J						
UNKNOWN	17.75	ABN/2	3.00000	J						
UNKNOWN	18.80	ABN/2	2.00000	J						
UNKNOWN	24.90	ABN/2	1.00000	J						
UNSPECIFIED ALKANE	130.95	ABN/2	0.60000	J						
UNKNOWN	133.75	ABN/2	2.00000	J						
UNKNOWN	16.93	ABN/2	2.00000	J						
BENZALDEHYDE	17.17	ABN/2	2.00000	J						
ETHANONE, 1-PHENYL-	19.07	ABN/2	0.80000	J						
DODECANOIC ACID	116.58	ABN/2	20.00000	J						
UNKNOWN	124.90	ABN/2	1.00000	J						
UNKNOWN	132.45	ABN/2	0.50000	J						
UNKNOWN	16.60	ABN/2	2.00000	J						
UNKNOWN	17.57	ABN/2	4.00000	J						
UNKNOWN	124.88	ABN/2	1.00000	J						
UNSPECIFIED ALKANE	127.30	ABN/2	0.60000	J						
UNSPECIFIED ALKANE	128.90	ABN/2	1.00000	J						
UNSPECIFIED ALKANE	130.93	ABN/2	2.00000	J						
UNKNOWN	133.55	ABN/2	0.90000	J						
UNKNOWN	16.68	ABN/2			0.70000	J				
UNKNOWN	17.77	ABN/2			3.00000	J				
UNKNOWN	18.78	ABN/2			1.00000	J				
UNKNOWN	122.30	ABN/2			0.50000	J				
UNKNOWN	122.52	ABN/2			0.50000	J				
UNKNOWN	124.88	ABN/2			1.00000	J				
UNKNOWN	127.05	ABN/2			0.50000	J				
UNSPECIFIED ALKANE	127.30	ABN/2			0.50000	J				
UNSPECIFIED ALKANE	128.90	ABN/2			0.50000	J				
UNKNOWN	133.62	ABN/2			6.00000	J				
UNKNOWN	17.77	ABN/2				4.00000	J			
UNKNOWN	18.78	ABN/2				0.80000	J			
UNSPECIFIED ALKANE	118.00	ABN/2				0.80000	J			
UNSPECIFIED ALKANE	120.15	ABN/2				0.60000	J			
UNSPECIFIED ALKANE	121.18	ABN/2				0.40000	J			
UNKNOWN	124.90	ABN/2				1.00000	J			
UNKNOWN	127.57	ABN/2				4.00000	J			
UNSPECIFIED ALKANE	128.92	ABN/2				0.80000	J			
UNSPECIFIED ALKANE	130.95	ABN/2				1.00000	J			
UNKNOWN	133.75	ABN/2				0.70000	J			
UNKNOWN	16.97	ABN/2					0.60000	J		

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB INO - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)
 2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOUSTON LABORATORY ANALYTE X - OTHER ANALYTE
 J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) C - MS CONFIRMATION
 R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

Chemical Data Summary

CASE NUMBER: 15522

CONCENTRATIONS IN PARTS PER MILLION (ppm/kg)

TRAFFIC REPORT NUMBER AND STATION LOCATION

[illegible]

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB IND - INDRGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)
2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOUSTON LABORATORY ANALYTE X - OTHER ANALYTE
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CROL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) C - MS CONFIRMATION
R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

Chemical Data Summary

SITE NAME AND CODE: LARRY LANDRY DUMP LAD985169804

CASE NUMBER: 15828

Page 1 of 2

CONCENTRATIONS IN PARTS PER MILLION (mg/l)

Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Traffic Number	FM179/MFK893	FM182/MFK892	FM183/MFK895	FM184/MFK891	FM185/MFK905	FM186/MFK904	FM187/MFK889	FM188/MFK906	FL577/MFK903	
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	
Percent Moisture										
Location	GGW-2 swc	GGW-3 swc	GGW-4 swc	GGW-5 swc	SW-1	SW-2	TB	SW-3	GW-1	
And/Or	LAGOON	CANAL S.	ON-SITE SW	CANAL SW	CANAL E.	CANAL N.E.	TRIP BLANK	CANAL	WELL	
Sample										
Description										
Compound Name	CAS/SCAN	CLASS								
ALUMINUM	7429-90-5	IND	0.08420	0.04870	0.44500		0.19800	0.08700		0.07910
BARIUM	7440-39-3	1.0P	0.28200	0.23200	0.40800	0.29300	0.21400	0.27500		0.28100
CALCIUM	7440-47-2	IND	51.40000	50.50000	134.00000	77.30000	47.80000	61.30000	0.07540	62.10000
CHROMIUM	7440-47-3	0.050			0.04500					139.00000
COBALT	7440-48-4	IND	0.00670	0.00510	0.00890					0.00500
COPPER	7440-50-8	1.0S			0.00710					0.00720
IRON	7439-89-6	0.3S	0.30600	0.27000	2.75000	0.14700	0.24300	0.42100		0.40900
LEAD	7439-92-1	0.050		0.00380	0.01170		0.00220			4.80000
MAGNESIUM	7439-95-4	IND	46.70000	42.10000	38.50000	41.80000	38.20000	39.10000		38.90000
MANGANESE	7439-96-5	0.050	0.09440	0.18300	2.81000	0.12700	0.07980	0.27600		54.70000
MERCURY	7439-97-6	0.050	0.00024	0.00045		0.00024		0.00056		0.29400
POTASSIUM	7440-09-7	IND	17.90000	15.60000	50.80000	3.30000	5.57000	3.37000		0.66800
SELENIUM	7782-49-2	0.010	0.00450	0.00380	0.00760	0.00450	0.00380	0.00450		3.67000
SODIUM	7440-23-5	IND	331.00000	296.00000	371.00000	220.00000	227.00000	216.00000	0.27300	214.00000
ZINC	7440-66-6	5.0S	0.01070	0.06040	0.50700		0.01180	0.01780		216.00000
ACETONE	67-64-1	VOA/1								0.21300
1,1,1-TRICHLOROETHANE	71-55-6	VOA/1								0.00300
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	ABN/1						0.00800	J	
DI-N-OCTYLPHTHALATE	117-84-0	ABN/1						0.00300	J	0.00400
UNKNOWN	13.32	VOA/2					0.03200	J		
UNKNOWN	13.32	VOA/2								
UNKNOWN	13.40	VOA/2			0.02800	BJ				
UNKNOWN	13.43	VOA/2				0.02800	J			
UNKNOWN	13.47	VOA/2		0.04100	BJ					
UNKNOWN	13.47	VOA/2								
UNKNOWN	13.50	VOA/2						0.05200	BJ	
UNKNOWN	13.57	VOA/2	0.06000	BJ						
UNKNOWN	14.43	VOA/2	0.03300	J						
UNKNOWN	13.87	VOA/2								
UNKNOWN	13.89	VOA/2				0.02000	J			
UNKNOWN	123.72	VOA/2						0.00400	J	
TETRADECANOIC ACID	20.79	ABN/2	0.06300	J						
UNKNOWN	21.57	ABN/2	0.00880	J						
9-HEXADECANOIC ACID	23.15	ABN/2	0.03900	J						
HEXADECANOIC ACID	23.39	ABN/2	0.03600	J						
UNKNOWN	25.42	ABN/2	0.04100	J						
UNKNOWN	25.49	ABN/2	0.03300	J						
UNKNOWN	25.61	ABN/2	0.11000	J						
UNKNOWN	26.02	ABN/2	0.01300	J						
UNKNOWN	27.47	ABN/2	0.01900	J						

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB IND - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)

2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOUSTON LABORATORY ANALYTE X - OTHER ANALYTE

J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) C - MS CONFIRMATION

R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

Chemical Data Summary

SITE NAME AND CODE: LARRY LANDRY DUMP LAD985169804

CASE NUMBER: 15828

Page 2 of 2

CONCENTRATIONS IN PARTS PER MILLION (mg/l)

Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

[illegible]

VDA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB INO - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)

2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOUSTON LABORATORY ANALYTE X - OTHER ANALYTE

J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CROL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) C - MS CONFIRMATION

R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

TARGET COMPOUND LIST ANALYTE LISTS

Samples for this site were analyzed for the specific Target Compound List (TCL) compounds on the following pages. Data Summary Tables included with this report list only those compounds detected in the samples. If a compound is not listed on the Data Summary Table but is included on the attached lists, it was not detected in the samples. Four different sets of lists may be included, depending of the analytical protocols for the samples. These lists include:

1. Houston EPA Laboratory Drinking Water Sample Analysis
2. CLP Multi-Media, Multi-Concentration Sample Analysis
3. CLP Low Concentration Water Sample Analysis
4. CLP High Concentration Sample Analysis

The lists include the CAS number for each analyte. CLP CRDLs (Contract Required Detection Limits-metals and cyanide) or CRQLs (Contract Required Quantitation Limits-organics) for each analyte are listed for each of the CLP protocols. For samples analyzed by the Houston EPA laboratory, CLP multi-media low concentration water CRDLs or CRQLs and Houston laboratory Detection limits (DL) are listed.

Note that sample specific CRDLs or CRQLs are dependent on sample size, dilution and moisture content (soils). Variations in sample size and sample dilutions are noted in the data evaluation. The moisture content of each soil sample is listed on the data summary sheet.

Descriptions of how to determine CLP medium concentration soil CRQLs are listed at the bottom of the page of the multi-media multi-concentration lists.

CLP MULTI-MEDIA MULTI-CONCENTRATION ORGANIC VOLATILE ANALYTES

ANALYTE	CAS #	WATER CRQL mg/l (ppm)	SOIL CRQL mg/kg (ppm)
CHLOROMETHANE	74-87-3	0.010	0.010
BROMOMETHANE	74-83-9	0.010	0.010
VINYL CHLORIDE	75-01-4	0.010	0.010
CHLOROETHANE	75-00-3	0.010	0.010
METHYLENE CHLORIDE	75-09-2	0.005	0.005
ACETONE	67-64-1	0.010	0.010
CARBON DISULFIDE	75-15-0	0.005	0.005
1,1-DICHLOROETHENE	75-35-4	0.005	0.005
1,1-DICHLOROETHANE	75-34-3	0.005	0.005
1,2-DICHLOROETHENE (TOTAL)	540-59-0	0.005	0.005
CHLOROFORM	67-66-3	0.005	0.005
1,2-DICHLOROETHANE	107-06-2	0.005	0.005
2-BUTANONE	78-93-3	0.010	0.010
1,1,1-TRICHLOROETHANE	71-55-6	0.005	0.005
CARBON TETRACHLORIDE	56-23-5	0.005	0.005
VINYL ACETATE	108-05-4	0.010	0.010
BROMODICHLOROMETHANE	75-27-4	0.005	0.005
1,2-DICHLOROPROPANE	78-87-5	0.005	0.005
cis-1,3-DICHLOROPROPENE	10061-01-5	0.005	0.005
TRICHLOROETHENE	79-01-6	0.005	0.005
DIBROMOCHLOROMETHANE	124-48-1	0.005	0.005
1,1,2-TRICHLOROETHANE	79-00-5	0.005	0.005
BENZENE	71-43-2	0.005	0.005
trans-1,3-DICHLOROPROPENE	10061-02-6	0.005	0.005
BROMOFORM	75-25-2	0.005	0.005
4-METHYL-2-PENTANONE	108-10-1	0.010	0.010
2-HEXANONE	591-78-6	0.010	0.010
TETRACHLOROETHENE	127-18-4	0.005	0.005
TOLUENE	108-88-3	0.005	0.005
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.005	0.005
CHLOROBENZENE	108-90-7	0.005	0.005
ETHYL BENZENE	100-41-4	0.005	0.005
STYRENE	100-42-5	0.005	0.005
XYLENES (TOTAL)	1330-20-7	0.005	0.005

The above quantitation limits are for low concentration samples.

Medium concentration soil sample quantitation limits are 125 times the low concentration soil quantitation limits listed.

CLP MULTI-MEDIA MULTI-CONCENTRATION ORGANIC ABN (SEMI-VOLATILE) ANALYTES

ANALYTE	CAS #	WATER CRQL mg/l (ppm)	SOIL CRQL mg/kg (ppm)
PHENOL	108-95-2	0.010	0.330
bis(2-CHLOROETHYL) ETHER	111-44-4	0.010	0.330
2-CHLOROPHENOL	95-57-8	0.010	0.330
1,3-DICHLOROBENZENE	541-73-1	0.010	0.330
1,4-DICHLOROBENZENE	106-46-7	0.010	0.330
BENZYL ALCOHOL	100-51-6	0.010	0.330
1,2-DICHLOROBENZENE	95-50-1	0.010	0.330
2-METHYLPHENOL	95-48-7	0.010	0.330
bis(2-CHLOROISOPROPYL) ETHER	108-60-1	0.010	0.330
4-METHYLPHENOL	106-44-5	0.010	0.330
N-NITROSO-di-n-PROPYLAMINE	621-64-7	0.010	0.330
HEXACHLOROETHANE	67-72-1	0.010	0.330
NITROBENZENE	98-95-3	0.010	0.330
ISOPHORONE	78-59-1	0.010	0.330
2-NITROPHENOL	88-75-5	0.010	0.330
2,4-DIMETHYLPHENOL	105-67-9	0.010	0.330
BENZOIC ACID	65-85-0	0.050	1.600
bis(2-CHLOROETHOXY)METHANE	111-91-1	0.010	0.330
2,4-DICHLOROPHENOL	120-83-2	0.010	0.330
1,2,4-TRICHLOROBENZENE	120-82-1	0.010	0.330
NAPHTHALENE	91-20-3	0.010	0.330
4-CHLOROANILINE	106-47-8	0.010	0.330
HEXACHLOROBUTADIENE	87-68-3	0.010	0.330
4-CHLORO-3-METHYLPHENOL	59-50-7	0.010	0.330
2-METHYLNAPHTHALENE	91-57-6	0.010	0.330
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.010	0.330
2,4,6-TRICHLOROPHENOL	88-06-2	0.010	0.330
2,4,5-TRICHLOROPHENOL	95-95-4	0.050	1.600
2-CHLORONAPHTHALENE	91-58-7	0.010	0.330
2-NITROANILINE	88-74-4	0.050	1.600
DIMETHYLPHTHALATE	131-11-3	0.010	0.330
ACENAPHTHYLENE	208-96-8	0.010	0.330
2,6-DINITROTOLUENE	606-20-2	0.010	0.330
3-NITROANILINE	99-09-2	0.050	1.600
ACENAPHTHENE	83-32-9	0.010	0.330
2,4-DINITROPHENOL	51-28-5	0.050	1.600
4-NITROPHENOL	100-02-7	0.050	1.600
DIBENZOFURAN	132-64-9	0.010	0.330
2,4-DINITROTOLUENE	121-14-2	0.010	0.330
DIETHYLPHTHALATE	84-66-2	0.010	0.330
4-CHLOROPHENYL-PHENYL ETHER	7005-72-3	0.010	0.330
FLUORENE	86-73-7	0.010	0.330
4-NITROANILINE	100-01-6	0.050	1.600
4,6-DINITRO-2-METHYLPHENOL	534-52-1	0.050	1.600
N-NITROSODIPHENYLAMINE	86-30-6	0.010	0.330

CLP MULTI-MEDIA MULTI-CONCENTRATION ABN (SEMI-VOLATILE) ORGANIC ANALYTES
(CONT.)

ANALYTE	CAS #	WATER CRQL mg/l (ppm)	SOIL CRQL mg/kg (ppm)
4-BROMOPHENYL-PHENYLETHER	101-55-3	0.010	0.330
HEXACHLOROBENZENE	118-74-1	0.010	0.330
PENTACHLOROPHENOL	87-86-5	0.050	1.600
PHENANTHRENE	85-01-8	0.010	0.330
ANTHRACENE	120-12-7	0.010	0.330
DI-n-BUTYLPHTHALATE	84-74-2	0.010	0.330
FLUORANTHENE	206-44-0	0.010	0.330
PYRENE	129-00-0	0.010	0.330
BUTYLBENZYLPHTHALATE	85-68-7	0.010	0.330
3,3'-DICHLOROBENZIDINE	91-94-1	0.020	0.660
BENZO(a)ANTHRACENE	56-55-3	0.010	0.330
CHRYSENE	218-01-9	0.010	0.330
bis(2-ETHYLHEXYL)PHTHALATE	117-81-7	0.010	0.330
DI-n-OCTYLPHTHALATE	117-84-0	0.010	0.330
BENZO(b)FLUORANTHENE	205-99-2	0.010	0.330
BENZO(k)FLUORANTHENE	207-08-9	0.010	0.330
BENZO(a)PYRENE	50-32-8	0.010	0.330
INDENO(1,2,3-cd)PYRENE	193-39-5	0.010	0.330
DIBENZ(a,h)ANTHRACENE	53-70-3	0.010	0.330
BENZO(g,h,i)PERYLENE	191-24-2	0.010	0.330

The above quantitation limits are for low concentration samples.

Medium concentration soil sample quantitation limits are 60 times the low concentration soil quantitation limits listed.

CLP MULTI-MEDIA MULTI-CONCENTRATION ORGANIC PESTICIDE/PCB ANALYTES

ANALYTE	CAS #	WATER CRQL mg/l (ppm)	SOIL CRQL mg/kg (ppm)
alpha-BHC	319-84-6	0.00005	0.0080
beta-BHC	319-85-7	0.00005	0.0080
delta-BHC	319-86-8	0.00005	0.0080
gamma-BHC (lindane)	58-89-9	0.00005	0.0080
HEPTACHLOR	76-44-8	0.00005	0.0080
ALDRIN	309-00-2	0.00005	0.0080
HEPTACHLOR EPOXIDE	1024-57-3	0.00005	0.0080
ENDOSULFAN I	959-98-8	0.00005	0.0080
DIELDRIN	60-57-1	0.00010	0.0160
4,4'-DDE	72-55-9	0.00010	0.0160
ENDRIN	72-20-8	0.00010	0.0160
ENDOSULFAN II	33213-65-9	0.00010	0.0160
4,4'-DDD	72-54-8	0.00010	0.0160
ENDOSULFAN SULFATE	1031-07-8	0.00010	0.0160
4,4'-DDT	50-29-3	0.00010	0.0160
METHOXYCHLOR	72-43-5	0.00050	0.0080
ENDRIN KETONE	53494-70-5	0.00010	0.0160
alpha-CHLORDANE	5103-71-9	0.00050	0.0080
gamma-CHLORDANE	5103-74-2	0.00050	0.0080
TOXAPHENE	8001-35-2	0.0010	0.160
AROCLOR-1016	12674-11-2	0.0005	0.080
AROCLOR-1221	11104-28-2	0.0005	0.080
AROCLOR-1232	11141-16-5	0.0005	0.080
AROCLOR-1242	53469-21-9	0.0005	0.080
AROCLOR-1248	12672-29-6	0.0005	0.080
AROCLOR-1254	11097-69-1	0.0010	0.160
AROCLOR-1260	11096-82-5	0.0010	0.160

The above quantitation limits are for low concentration samples.

Medium concentration soil sample quantitation limits are 15 times the low concentration soil quantitation limits listed.

CLP MULTI-MEDIA MULTI-CONCENTRATION FULL INORGANIC ANALYTES

ANALYTE	CAS #	WATER CRDL	SOIL CRDL
		mg/l (ppm)	mg/kg (ppm)
ALUMINUM	7429-90-5	0.200	40
ANTIMONY	7440-36-0	0.060	12
ARSENIC	7440-38-2	0.010	2
BARIUM	7440-39-3	0.200	40
BERYLLIUM	7440-41-7	0.005	1
CADMIUM	7440-43-9	0.005	1
CALCIUM	7440-47-2	5.000	1000
CHROMIUM	7440-47-3	0.010	2
COBALT	7440-48-4	0.050	10
COPPER	7440-50-8	0.025	5
IRON	7439-89-6	0.100	20
LEAD	7439-92-1	0.003	0.6
MAGNESIUM	7439-95-4	5.000	1000
MANGANESE	7439-96-5	0.015	3
MERCURY	7439-97-6	0.0002	0.1
NICKEL	7440-02-0	0.040	8
POTASSIUM	7440-09-7	5.000	1000
SELENIUM	7782-49-2	0.005	1
SILVER	7440-22-4	0.010	2
SODIUM	7440-23-5	5.000	1000
THALLIUM	7440-28-0	0.010	2
VANADIUM	7440-62-2	0.050	10
ZINC	7440-66-6	0.020	4
CYANIDE		0.010	5

ATTACHMENT C

QUALITY ASSURANCE/QUALITY CONTROL OF DATA

DATA QUALITY ASSURANCE REVIEW

SITE NAME: Larry Landry Dump

SITE CODE: FLA0361SAF

PAN: FLA0361SAF

CASE NUMBER: 15522

LABORATORY: SWRI

SAMPLE NUMBERS

FL562	FL570	FL573	FL576
FL564	FL571	FL574	FL577
FL568	FL572	FL575	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

REVIEWER: Michael Watson

WOW
4/25/01

DATA EVALUATION

SITE NAME: Larry Landry Dump

CASE NUMBER: 15522

SAMPLE NUMBERS: Soil Samples - FL562, FL564, FL570, FL571, FL572, FL573, FL574, FL575, FL576

Water Sample - FL577

This data package consists of ten soil and one water sample analyzed for full TCL organics. Data qualifications are listed below.

VOA FRACTION:

1. Analytical Parameters: All samples were analyzed using low concentration protocols.
2. Internal Standard Areas: All internal standard areas for sample FL568 were below control limits. All results for FL568 are considered estimates, biased high. The sample was re-analyzed but the internal standard areas were not reported and the original results are reported.
3. Method Blanks: Acetone, 2-butanone, 4-methyl-2-pentanone, methylene chloride, toluene and a TIC identified as acetonitrile were reported in the soil method blanks. Sample concentrations of acetone, 2-butanone and methylene chloride less than ten times their concentration in an associated method blank are considered laboratory contamination. Sample concentrations of toluene, 4-methyl-2-pentanone and acetonitrile less than five times their concentration in an associated method blank are considered to be laboratory contaminants.

The following parameters were evaluated by the Houston EPA Laboratory. Data qualifications are listed in the attached review.

Holding Times
Mass Spectrometer Tuning
Initial Calibration
Continuing Calibration
Surrogate Recoveries
Matrix Spike Recoveries
Duplicates
TCL Identification

ABN FRACTION

1. Analytical Parameters: All samples were analyzed utilizing low concentration soil or water protocols. GPC cleanup of the extract was employed on all soil samples and quantitation limits for the soil samples are two times the low soil CRQLs.
2. Method Blanks: An unknown TIC was detected in the water method blank. Reported concentration of this TIC in the water sample less than five times its

concentration in the method blank is considered to be a laboratory contaminant.

The following parameters were evaluated by the Houston EPA Laboratory. Data qualifications are listed in the attached review.

Holding Times
Mass Spectrometer Tuning
Initial Calibrations
Continuing Calibrations
Internal Standard Areas
Surrogate Recoveries
Matrix Spike Recoveries
Duplicates
TCL Identification

PESTICIDE/PCB FRACTION

1. Analytical Parameters: All samples were analyzed by low concentration soil or water protocols. GPC cleanup of the extract was employed with all soil samples and quantitation limits for the soil samples are two times low soil CRQLs.

The following parameters were evaluated by the Houston EPA Laboratory. Data qualifications are listed in the attached review.

Holding Times
Calibration
Surrogate Recoveries
Method Blanks
Matrix Spike Recoveries
Duplicates
TCL Identification

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD
HOUSTON, TX 77099

Ref. Case No. 15522

Site Name Larry Landry

Date: 1 / 16 / 91

Subject: CLP Data Review

From: MD Michael L. Daggett, Chief, Organic Lab Section; 6E-HL

To: E. Sierra, GE-SH

A review of the laboratory raw data for the reference site has been completed by members of the Laboratory Section.

Samples were:

INORGANIC:				
ORGANIC:	<u>FL562</u>	<u>FL570</u>		
	<u>↓ 564</u>	<u>↓</u>		
	<u>↓ 568</u>	<u>↓</u>		
		<u>↓</u>		
		<u>FL577</u>		

The data was found:

- () Acceptable
- (X) Provisional; use of data requires caution. Problems are noted in Review Summary.
- () Unacceptable; data should not be used. Problems are noted in Review Summary.

Questions regarding the review can be addressed to me.

Attachments

cc: William Verret, 6E-HL
Mike Carter, OS-230
Mike Hiatt, EMSL/Las Vegas

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 15522 SITE Larry Landry Dump
LABORATORY SWRI NO. OF SAMPLES 11
CONTRACT# 68-D9-0057 MATRIX Soil & Water
SDG# FL562 REVIEWER (IF NOT ESD) ESAT
SOW# RAS IFB 2/88 REVIEWER'S NAME Wallace Doong
TPO: ACTION FYI * COMPLETION DATE January 15, 1991
ACCT# 1TGBDN42 SF# TGBUZZ

SAMPLE NO.	FL-562	FL-571	FL-575		
	FL-564	FL-572	FL-576		
	FL-568	FL-573	FL-577		
	FL-570	FL-574			

DATA ASSESSMENT SUMMARY

	VOA	BNA	PEST	OTHER
1. HOLDING TIMES	O	O	O	N/A
2. GC/MS TUNE/INSTR. PERFORM.	O	O	O	N/A
3. CALIBRATIONS	O	O	X	N/A
4. BLANKS	O	O	O	N/A
5. SURROGATES	O	O	O	N/A
6. MATRIX SPIKE/DUP	O	O	O	N/A
7. OTHER QC	N/A	N/A	N/A	N/A
8. INTERNAL STANDARDS	X	O	N/A	N/A
9. COMPOUND IDENTIFICATION	O	O	O	N/A
10. SYSTEM PERFORMANCE	O	O	O	N/A
11. OVERALL ASSESSMENT	X	O	X	N/A

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.
NA = Not applicable.

ACTION ITEMS: VOA: Acetone failed %RSD calibration criteria.
Internal standard areas were below QC limits in one sample. Sample
analysis exceeded technical holding time limit.

AREA OF CONCERN: Data package was 5 days late. VOA: Reanalysis data
were omitted for sample FL-568. BNA: GPC deliverables were omitted.

NOTABLE PERFORMANCE:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

MEMORANDUM

Date: January 15, 1991
Subject: CLP Data Review
From: Michael L. Daggett, Chief, Organic Lab Section; 6E-HL
To: Quality Assurance Officer, AOB; WH-548A

Attached is the data review summary for Case # 15522
SDG # FL562
Site Larry Landry Dump

Data was found: ☒ (X) Provisional
☐ () Unacceptable

Action required by TPO: ☐ () Yes
☒ (X) No

COMMENTS: Data package was 5 days late. VOA: Acetone failed %RSD calibration criteria. Internal standard areas were below QC limits in one sample and reanalysis data were omitted. Sample analysis exceeded technical holding time limit. BNA: GPC deliverables were omitted.

Attachment (1)

cc: William Verret, TPO
Mike Hiatt, EMSL/Las Vegas

**COMMENTS/CLARIFICATIONS
REGION 6 CLP QA REVIEW**

CASE 15522 SDG:FL562 **SITE** Larry Landry Dump **LAB** SWRI

The following is a summary of sample qualifiers used by Region 6 in reporting this CLP data:

<u>No.</u>	<u>Acceptable</u>	<u>Provisional</u>	<u>Unacceptable</u>
VOA		11	
BNA	11		
PEST	11		
OTHER	N/A		

COMMENTS: The case consisted of ten soil samples and one water sample for complete RAS organics. The data package arrived five days late for 21 day turnaround. Carbon disulfide and laboratory blank contaminants methylene chloride, acetone, and toluene were reported in some VOA samples. Phenol was reported >CRQL in one BNA sample. No target compounds were reported in Pest/PCB samples. Data for all VOA samples are provisional due to holding time, internal standard and calibration deficiencies.

1. Holding Times - Provisional. VOA analysis for samples FL-577, FL-577MS, and FL-577MSD exceeded technical holding time limit (40CFR136). Results for VOA aromatic compounds are estimated in sample FL-577. The BNA and Pest/PCB samples were extracted and analyzed within contractual and technical holding time limits.

2. Tuning/Performance - Provisional. BFB and DFTPP met GC/MS tuning criteria. Internal standard areas were within QC limits for BNA samples. VOA sample FL-568 was reanalyzed due to low internal standard area responses, but internal standard responses and other required data were not reported for the reanalysis. VOA results for sample FL-568 are estimated. Pest/PCB analysis met instrument performance criteria.

3. Calibrations - Provisional. CCC and SPCC compounds met calibration criteria for VOA and BNA fractions. Results for acetone in VOA samples FL-562, FL-564, FL-568, and FL-570 through FL-576 are estimated because acetone failed %RSD calibration requirements. Aldrin exceeded QC limits for %RSD on the confirmation column and some compounds exceeded QC limits for %D on the primary column, but no action was taken.

**ORGANIC QA CHECKLIST
CONTINUATION PAGE**

CASE NO. 15522 **SDG:**FL562 **SITE** Larry Landry Dump

COMMENTS:

4. Blanks - Acceptable. Laboratory contaminants acetone, methylene chloride, 2-butanone, 4-methyl-2-pentanone, and toluene were reported in some VOA method blanks. Sample results < 10X blank levels for acetone, methylene chloride, and 2-butanone, and < 5X blank levels for 4-methyl-2-pentanone and toluene are estimated, due to possible laboratory contamination. BNA and Pest/PCB method blanks met QC guidelines.

5. Surrogates - Acceptable. Surrogate recoveries were within QC guidelines for all fractions.

6. Matrix Spike/Matrix Spike Duplicate - Provisional. The MS and MSD recoveries for 1,1-dichloroethene, chlorobenzene, benzene, and trichloroethene, and %RPD for 1,1-dichloroethene exceeded QC limits in VOA sample FL-562. The BNA MS recoveries for 4-nitrophenol in sample FL-577, and pyrene in sample FL-570 exceeded QC limits. No action was taken. The MS/MSD recoveries were within QC limits for Pest/PCB fraction.

7. Compound Identity/ Data completeness - Provisional. Carbon disulfide and laboratory blank contaminants methylene chloride, acetone, and toluene were reported in some VOA samples. Phenol was reported in one BNA sample. Sample spectra met identification criteria. No target compounds were reported in Pest/PCB samples. The data package was complete, except for GPC deliverables and some omitted data. The laboratory was notified of the needed resubmissions (see attached FAX Record Log).

8. Case Assessment - Data for 11 VOA samples are provisional due to calibration, internal standard, and holding time deficiencies. Data for 11 BNA samples and 11 Pest/PCB samples are acceptable.

In Reference to Case No(s):
15522 SDG: FL562

REGIONAL/LABORATORY COMMUNICATION SYSTEM
FAX Record Log

Date of FAX:	January 16, 1991
Laboratory Name:	SWRI
Lab Contact:	JoAnn Boyd
Region:	6
Regional Contact:	Wallace Doong - ESAT
FAX initiated by:	Laboratory X Region

In reference to data for the following fractions:

General VOA

Summary of Questions/Issues:

A. General

1. Please submit GPC chromatograms for all samples, standards, blanks, and check analysis with % recoveries marked in BNA and Pest/PCB fractions (2.6.2 D-27/Pest SOW 2/88).

B. VOA

1. FL-568RE: Required deliverables were omitted. Analysis is not listed on QC forms II, IV, V, and VIII. Please resubmit missing data.

Please respond to the above items. Region 6 resubmissions may be included with the CCS response or sent within 10 days to:

US EPA Region 6 Laboratory
10625 Fallstone Road
Houston, TX 77099

If you have any questions, please contact me at (713) 983-2136.

Wallace Doong
Signature

1-16-1991
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

RESUBMITTED DATA REVIEW REPORT

DATE: 03/14/91 CASE #: 15522
SAS #: _____
TO: E. SIERRA (6E-SH) SDG #: FL562
LAB : SWRI
FROM: Wallace Doong - ESAT SITE NAME: Larry Landry Dump
Region 6

EFFECTS OF RESUBMITTED INFORMATION ON THE ORIGINAL DATA:

Laboratory response to CCS report:

The resubmitted information does not affect the data review.

COVER SHEET

LABORATORY RESPONSE TO RESULTS OF
CONTRACT COMPLIANCE SCREENING (CCS)

Response To (Check one)

☒ Organics CCS☐ Inorganics CCS

Response materials should be sent to the attention of the CCS Coordinator.

Laboratory Name

SWRL

Response Date

1/28/91

Date Screening
Results Received
at Laboratory

1/16/91

EPA Contract No.

68-D9-0057

Case No.

15522

SDG No.

FL562

Sample Nos.

all

*Only list sample numbers that require reconciliation.

This form is used to identify materials sent in response to results of Contract Compliance Screening (CCS). A separate form must accompany the response for each Case.

Please indicate (on the attached continuation form) which fractions and/or which criteria correspond with your resubmission. Response materials sent to CCS should also be copied to the Region and to EMSL/LV, each with this blue Cover Sheet.

12/12/89

15522 FL562

Invalid sample numbers do not apply. Samples ID'd by attached OTR. Please remove action

DATA QUALITY ASSURANCE REVIEW

SITE NAME: Larry Landry Dump

SITE CODE: LAD985169804

PAN: FLA0361SAF

CASE NUMBER: 15828

LABORATORY: Weyerhaeuser

SAMPLE NUMBERS

FM179

FM183

FM185

FM187

FM182

FM184

FM186

FM188

REVIEWER: Michael Watson

Ja
6/25/01

DATA EVALUATION

SITE NAME: Larry Landry Dump

CASE NUMBER: 15828

SAMPLE NUMBERS: FM179, FM182, FM183, FM184, FM185, FM186, FM187, FM188

This data package consists of eight water samples analyzed for full TCL organics. Data qualifications are listed below.

VOA FRACTION

1. Analytical Parameters: All samples were analyzed using low concentration water protocols.

2. Method Blank: One TIC was reported in the method blank. Sample concentrations of this TIC that are less than five times its method blank concentration are considered to be laboratory contaminants.

The following parameters were evaluated by the Houston EPA Laboratory. Data qualifications for these parameters are listed in the attached review.

Holding Times
Mass Spectrometer Tuning
Initial Calibration
Continuing Calibration
Internal Standard Areas
Surrogate Recoveries
Matrix Spike Recoveries
Duplicates
TCL Identification

ABN FRACTION

1. Analytical Parameters: All samples were analyzed using low concentration water protocols.

2. Method Blanks: No target analytes or TICs were detected in the method blank.

The following parameters were evaluated by the Houston EPA Laboratory. Data qualifications for these parameters are listed in the attached review.

Holding Times
Mass Spectrometer Tuning
Initial Calibration
Continuing Calibration
Internal Standard Areas
Surrogate Recoveries
Matrix Spike Recoveries
Duplicates

TCL Identification

PESTICIDE/PCB FRACTION

1. Analytical Parameters: All samples were analyzed using low concentration water protocols.

The following parameters were evaluated by the Houston EPA Laboratory. Data qualifications are listed in the attached review.

Holding Times

GC Performance

Calibration

Surrogate Recoveries

Method Blanks

Matrix Spike Recoveries

Duplicates

TCL Identification

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD
HOUSTON, TX 77099

Ref. Case No. 15828

Site Name Larry Landry Dump

Date: 3 / 25 / 91

Subject: CLP Data Review

From: Michael L. Daggett, Chief, Organic Lab Section; 6E-HL

To: E. Sierra, GE-SH

A review of the laboratory raw data for the reference site has been completed by members of the Laboratory Section.
Samples were:

INORGANIC:	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
ORGANIC:	<u>FM-179</u>	_____	_____	_____
	<u>FM-182</u>	_____	_____	_____
	↓	_____	_____	_____
	<u>FM-188</u>	_____	_____	_____

The data was found:

- () Acceptable
- (X) Provisional; use of data requires caution. Problems are noted in Review Summary.
- () Unacceptable; data should not be used. Problems are noted in Review Summary.

Questions regarding the review can be addressed to me.

Attachments

cc: Mahmoud El-Feky, 6E-HL
Mike Hiatt, EMSL/Las Vegas

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 15828 SITE Larry Landry Dump
LABORATORY WEYER NO. OF SAMPLES 8
CONTRACT# 68-D9-0026 MATRIX Water
SDG# FM179 REVIEWER (IF NOT ESD) ESAT
SOW# RAS IFB 4/89 REVIEWER'S NAME Tseng-Ying Fan
TPO: ACTION FYI * COMPLETION DATE March 21, 1991
ACCT# 1TGBDN80 SF# TGBUZZ

SAMPLE NO.	FM-179	FM-185			
	FM-182	FM-186			
	FM-183	FM-187			
	FM-184	FM-188			

DATA ASSESSMENT SUMMARY

	VOA	BNA	PEST	OTHER
1. HOLDING TIMES	O	O	O	N/A
2. GC/MS TUNE/INSTR. PERFORM.	O	X	O	N/A
3. CALIBRATIONS	M	O	O	N/A
4. BLANKS	O	X	O	N/A
5. SURROGATES	O	O	O	N/A
6. MATRIX SPIKE/DUP	O	O	O	N/A
7. OTHER QC	N/A	N/A	N/A	N/A
8. INTERNAL STANDARDS	O	O	N/A	N/A
9. COMPOUND IDENTIFICATION	O	O	X	N/A
10. SYSTEM PERFORMANCE	O	O	O	N/A
11. OVERALL ASSESSMENT	M	X	X	N/A

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.
NA = Not applicable.

ACTION ITEMS: VOA: The compound 1,1,1-trichloroethane failed %D calibration criteria.

AREA OF CONCERN: The laboratory failed to analyze BNA method blank on one instrument.

NOTABLE PERFORMANCE: The data package arrived 3 days early.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TX 77099

MEMORANDUM

Date: March 21, 1991
Subject: CLP Data Review
From: Mahmoud El-Feky, Acting TPO, Region 6
To: Michael Daggett, Chief, Organic Section, Houston
Branch, Region 6

Attached is the data review summary for Case # 15828
SDG # FM179
Site Larry Landry Dump

Data was found: ☒ (X) Provisional
☐ () Unacceptable

Action required by TPO: ☐ () Yes
☒ (X) No

COMMENTS:

1. The laboratory failed to analyze BNA method blank on one instrument.

**COMMENTS/CLARIFICATIONS
REGION 6 CLP QA REVIEW**

CASE 15828 SDG: FM179 **SITE** Larry Landry Dump **LAB** WEYER

The following is a summary of sample qualifiers used by Region 6 in reporting this CLP data:

<u>No.</u>	<u>Acceptable</u>	<u>Provisional</u>	<u>Unacceptable</u>
VOA	<u>7</u>	<u>1</u>	<u> </u>
BNA	<u>8</u>	<u> </u>	<u> </u>
PEST	<u>8</u>	<u> </u>	<u> </u>
OTHER	<u>N/A</u>	<u> </u>	<u> </u>

COMMENTS: The case consisted of 8 water samples for complete RAS Organics. The data package arrived 3 days early for the 35 day turnaround. Low level analyses were performed. The laboratory failed to analyze BNA blank on one instrument on which associated samples were analyzed. VOA compound 1,1,1-trichloroethane was reported in sample FM-187. No BNA or Pesticide/PCB compounds were reported >CRQL in the samples. Data are provisional for VOA sample FM-187 due to a calibration deficiency.

1. **Holding Times** - Acceptable. Samples were extracted and analyzed within contractual and technical holding time limits for all fractions.

2. **Tuning/Performance** - Acceptable. BFB and DFTPP analyses met GC/MS tuning criteria. Results for a wrong DFTPP analysis were reported on one Form V, but the reviewer verified that submitted DFTPP data met GC/MS tuning criteria. Internal standard areas were within QC limits for VOA and BNA samples. Pesticide/PCB analyses met instrument performance guidelines.

3. **Calibrations** - Provisional. SPCC and CCC compounds met calibration criteria for VOA and BNA fractions. Result for 1,1,1-trichloroethane is estimated in VOA sample FM-187 because the compound failed %D calibration criteria. Aldrin failed linearity check criteria on the confirmation column, but sample data were not affected. BNA and other Pesticide/PCB calibrations met QC requirements.

4. **Blanks** - Acceptable. Method blanks met QC requirements for VOA and Pesticide/PCB fractions. The laboratory failed to analyze BNA method blank on one instrument, but sample data were not affected.

5. **Surrogates** - Acceptable. Surrogate recoveries were generally within QC limits for all samples in all fractions, except for BNA MS sample, but no data were qualified.

**ORGANIC QA CHECKLIST
CONTINUATION PAGE**

CASE NO. 15828 **SDG:** FM179 **SITE** Larry Landry Dump

COMMENT:

6. Matrix Spike/Matrix Spike Duplicate - Acceptable. MSD recovery marginally exceeded QC limit for benzene, and %RPDs exceeded QC limits for 1,1-dichloroethene and benzene in the VOA MS/MSD samples. MS/MSD recoveries exceeded QC limits for 4-nitrophenol for BNA fraction. However, VOA and BNA sample data were not affected. MS/MSD recoveries were within QC limits for Pesticide/PCB fraction.

7a. Compound Identity - Acceptable. VOA target compound 1,1,1-trichloroethane was reported >CRQL in sample FM-187. Bis(2-ethylhexyl)phthalate and di-n-octylphthalate were reported <CRQL in some BNA samples. Sample spectra met identification criteria. No Pesticide/PCBs were reported in the samples. Result for δ -BHC is rejected in sample FM-179MSD because the identification was not confirmed, but data for the unspiked sample FM-179 were not affected.

7b. Data Completeness - Acceptable. The data package was complete with the following minor deficiencies: VOA: Mass list data (P. 121) were illegible. "B" flag was omitted for TIC result #1 in 5 samples. BNA: The reported DFTPP tune results on Form V (P. 149) did not agree with submitted raw data. Pest: Incorrect EPA sample ID was reported on Forms I, IV and VIII for sample FM-182. The laboratory was notified of needed resubmissions (see attached FAX Record Log).

8. Case Assessment - Data are provisional for VOA sample FM-187 due to a calibration deficiency. Data are acceptable for 7 VOA and all BNA and Pesticide/PCB samples.

In Reference to Case No(s): 15828 SDG: FM179
--

REGIONAL/LABORATORY COMMUNICATION SYSTEM
FAX Record Log

Date of FAX: March 22, 1991
Laboratory Name: Weyerhaeuser
Lab Contact: Dennis Catalano

Region: 6
Regional Contact: Tseng-Ying Fan - ESAT

FAX initiated by: Laboratory X Region

In reference to data for the following fractions:

VOA BNA Pest

Summary of Questions/Issues:

A. VOA

1. The mass list for BFB analysis performed on 1/25/91 (P. 121) was illegible. Please resubmit.
2. "B" flag was omitted for TIC #1 results in samples FM-179, FM-182, FM-183, FM-186 and FM-187. Please verify.

B. BNA

1. Why wasn't SBLKW1 analyzed on instrument FINN2? (See SOW E-36/SV.)
2. Form V (P. 149): The reported results did not agree with raw data. Please revise Form V.

C. Pesticide/PCB

1. Sample FM-182: Incorrect EPA sample ID was reported on Forms I, IV and VIII (for both columns). Please revise.
2. Sample FM-179MSD: The identification of δ -BHC was not confirmed on DB-608 column. Please revise Form I result for δ -BHC.

FAX COMMUNICATION LOG

Continuation Page 2
Laboratory/Contact WEYER / Dennis Catalano
In Reference To Case No. 15828 SDG: FM179

Summary of Questions/Issues: (cont.)

Please respond to the above items. Region 6 resubmissions may be included with CCS response or sent separately within 10 days to:

US EPA Region 6 Laboratory
10625 Fallstone Road
Houston, TX 77099

If you have any questions, please contact me at (713) 983-2138.



Signature

March 21, 1991

Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

RESUBMITTED DATA REVIEW REPORT

DATE: 4/12/91 CASE #: 15828

SAS # : _____
TO: REM/RED SDG # : FM179
C/O E. Sierra (6E-SH) LAB : WEYER
FROM: Tseng-Ying Fan - ESAT SITE NAME: Larry Landry
Region 6 Dump

EFFECTS OF RESUBMITTED INFORMATION ON THE ORIGINAL DATA:

Laboratory response to Region 6 request.

A. VOA

1. Use the resubmitted mass list (P. 121).
2. Use the revised Forms I-TIC for samples FM-179, FM-182, FM-183, FM-186 and FM-187.

B. BNA

1. Use the corrected Form V (P. 149).

C. Pest/PCB

1. Use the corrected Forms II, IV and VIII (P. 430, 432, 471 and 472).
2. Use the corrected Forms I for samples FM-182 and FM-179MSD (P. 438 and 567).

COVER SHEET

LABORATORY RESPONSE TO RESULTS OF
CONTRACT COMPLIANCE SCREENING (CCS)

Response To: (Check one)

☒ Organics CCS☐ Inorganics CCS

JJ 0-12-91

Response materials should be sent to the attention of the CCS Coordinator.

Laboratory Name

Weyerhaeuser

Response Date

3-26-91Date Screening
Results Received
at Laboratory3-22-91

EPA Contract No.

68D90026

Case No.

15828

SDG No.

FM179

Sample Nos.*

FM179FM179MSDFM182FM183FM186FM187FM188

*Only list sample numbers that require reconciliation.

This form is used to identify materials sent in response to results of Contract Compliance Screening (CCS). A separate form must accompany the response for each Case.

Please indicate (on the attached continuation form) which fractions and/or which criteria correspond with your resubmission. Response materials sent to CCS should also be copied to the Region and to EMSL/LV, each with this blue Cover Sheet.

12/12/89

ORGANICS
LABORATORY RESPONSE TO RESULTS OF OCS

Sample	Fraction	Criterion	Comments
	VOL		<p>① mass list for OFB analyses performed on 1/25/91 was illegible. Action: new hard copy of mass list resubmitted. Also, corrected form 5A^{5A} and disk deliverables resubmitted (on 1/23/94).</p>
FM179	VOL		<p>② "B" flag was omitted for TIC #1 results.</p> <p>Hard copies of form IE for samples mentioned and corrected disk deliverables resubmitted.</p>
FM182			
FM183			
FM186			
FM187			
FM186	BNA	B	<p>The reported time of analysis is not within 12 hours of the reported DFTPP injection time/date.</p> <p>The incorrect time/date and % relative abundance were input in Formaster for the DFTPP on 02.22.91. The raw data submitted is correct. Both the hardcopy and disk deliverables for Form V have been corrected for resubmission.</p>
FM187			
FM188			
FM182	PEST		<p>① Incorrect EPA sample ID was reported on Forms I, IV, and VIII.</p> <p>Both hardcopy and disk deliverables have been corrected for resubmission.</p>

Criterion	Comments
PEST ②	<p>Sample FM179MSD: The identification of alpha-BHC was not confirmed on DB-608 column.</p> <p>Form I result for alpha-BHC has been revised. Please, review p. 567. Both hardcopy and disk deliverables have been corrected for resubmission.</p>
BNA	<p>Why wasn't SBLK W1 analyzed on instrument FINN2?</p> <p>This was done in error. Up to this point, we have been running the blank on only one instrument. This is the first time we have been told to run on all instruments. It is my understanding that the blanks are to check extraction related contaminants and the assumption within the entire CLP program is that all instruments are set up the same and therefore the data is compatible on any instrument not only in our lab, but in the entire CLP program. This will change in the future.</p>

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

RESUBMITTED DATA REVIEW REPORT

DATE: 4/12/91 CASE #: 15828
4/21/91 SAS # : _____
TO: REM/RED SDG # : FM179
C/O E. Sierra (6E-SH) LAB : WEYER
FROM: Tseng-Ying Fan - ESAT SITE NAME: Larry Landry
Region 6 Dump

EFFECTS OF RESUBMITTED INFORMATION ON THE ORIGINAL DATA:

Laboratory response to Region 6 request (4/12/91).

A. VOA

1. Use the resubmitted mass list (P. 121).
2. Use the revised Forms I-TIC for samples FM-179, FM-182, FM-183, FM-186 and FM-187.

B. BNA

1. Use the corrected Form V (P. 149).

C. Pest/PCB

1. Use the corrected Forms II, IV and VIII (P. 430, 432, 471 and 472).
2. Use the corrected Forms I for samples FM-182 and FM-179MSD (P. 438 and 567).

Laboratory response to CCS results (4/21/91).

A. VOA

1. Use the corrected Form VI (P. 87).

COVER SHEET

LABORATORY RESPONSE TO RESULTS OF
CONTRACT COMPLIANCE SCREENING (CCS)

Response To: (Check one)

☒ Organics CCS☐ Inorganics CCS

Response materials should be sent to the attention of the CCS Coordinator.

Laboratory Name

Weyerhaeuser

Response Date

4-18-91

Date Screening

Results Received

at Laboratory

4-12-91

EPA Contract No.

68-D9-0026

Case No.

15828

SDG No.

FM179

Sample Nos.*

FM179FM185FM179MSFM186FM179MSDFM187FM182FM188FM183FM184

*Only list sample numbers that require reconciliation.

This form is used to identify materials sent in response to results of Contract Compliance Screening (CCS). A separate form must accompany the response for each Case.

Please indicate (on the attached continuation form) which fractions and/or which criteria correspond with your resubmission. Response materials sent to CCS should also be copied to the Region and to EMSL/LV, each with this blue Cover Sheet.

12/12/89

DATA QUALITY ASSURANCE REVIEW

SITE NAME: Larry Landry Dump

SITE CODE: LAD985169804

PAN: FLA0361SAF

CASE NUMBER: 15522

LABORATORY: Southwest Laboratory of Oklahoma, Inc.

SAMPLE NUMBERS

MFK888	MFK893	MFK898	MFK903
MFK889	MFK894	MFK899	MFK904
MFK890	MFK895	MFK900	MFK905
MFK891	MFK896	MFK901	MFK906
MFK892	MFK897	MFK902	

REVIEWER: Michael Watson

DC
6/25/91

DATA EVALUATION

SITE NAME: Larry Landry Dump

CASE NUMBER: 15522

SAMPLE NUMBERS:

SOIL: MFK888, MFK889, MFK890, MFK894, MFK896, MFK897, MFK898, MFK899, MFK900, MFK901, MFK902

WATER: MFK889, MFK891, MFK892, MFK893, MFK895, MFK903, MFK904, MFK905, MFK906

The data package consists of eleven soil and eight water samples that were analyzed for TAL metals and cyanide.

ANALYTICAL PARAMETERS: All samples were analyzed using low concentration protocols. Thallium in water samples MFK891, MFK892, MFK893, MFK895, MFK903, MFK904, MFK905 and MFK906 was determined using a five fold dilution and detection limits for thallium in these samples are five times low water CRDLs. Calcium in sample MFK900 was determined using a two fold dilution and the detection limit for calcium in this sample is two times the low soil CRDL. Lead in soil sample MFK987 was determined at a two fold dilution; therefore, the detection limit for lead in this sample is two times the low soil CRDL. Lead in soil sample MFK894 was determined at a five fold dilution and the detection limit for lead in this sample is five times the low soil CRDL. Lead in soil sample MFK888 was determined at a 25 fold dilution and the detection limit of lead in this sample is 25 times the low soil CRDL. Lead in soil samples MFK889, MFK890, MFK896, MFK898, MFK899, MFK900, MFK901 and MFK902 was determined using a 100 fold dilution and the detection limit for lead in these samples is 100 times the low soil CRDL.

BLANKS

A. PREPARATION BLANKS: No target analytes were detected in the soil or water preparation blanks.

B. CALIBRATION BLANKS: Sodium and iron were detected at concentrations above their IDLs but less than their CRDLs in one or more continuing calibration blanks associated with the analysis of the soil samples. Sample results of these metals less than five times the amount in a calibration blank are considered laboratory contamination.

Calcium, iron and sodium were detected at concentrations above IDLs but less than CRDLs in continuing calibration blanks associated with the water samples. Sample results less than five times the amount in a calibration blank are considered laboratory contaminants.

The following parameters were evaluated by the Houston EPA Laboratory and data qualifications for these parameters are listed below.

Holding Times
Calibration Verifications
ICP Interference Check Samples
Laboratory Control Samples
Duplicates
Matrix Spike Recoveries
ICP Serial Dilution
Furnace AA QA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD
HOUSTON, TX 77099

Ref. Case No. 15522

Site Name Larry Landry

Date: 1 / 28 / 91

Subject: **CLP Data Review**

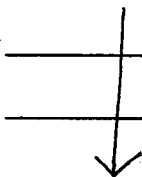
From: Michael L. Daggett, Chief, Organic Lab Section; 6E-HL

To: E. Sierra, 6E-SH

A review of the laboratory raw data for the reference site has been completed by members of the Laboratory Section.

Samples were:

INORGANIC: MFK888



MFK906

ORGANIC:

The data was found:

- ☐ Acceptable
- ☒ Provisional; use of data requires caution. Problems are noted in Review Summary.
- ☐ Unacceptable; data should not be used. Problems are noted in Review Summary.

Questions regarding the review can be addressed to me.

Attachments

cc: William Verret, 6E-HL
Mike Carter, OS-230
Mike Hiatt, EMSL/Las Vegas

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

MEMORANDUM

Date: January 25, 1991

Subject: CLP Data Review

From: Michael L. Daggett, Chief, Organic Lab Section; 6E-HL

To: Quality Assurance Office, AOB; WH-548A

Attached is the data review summary for Case # 15522
SDG # MFK888
Site Larry Landry Dump

Data was found: ☒ (X) Provisional
☐ () Unacceptable

Action required by TPO: ☐ () Yes
☒ (X) No

COMMENTS:

Attachment (1)

cc: William Verret, TPO
Mike Hiatt, EMSL/Las Vegas

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 15522 SITE Larry Landry Dump
LABORATORY Southwest Labs (OK) NO. OF SAMPLES
CONTRACT # 68-D9-0089 MATRIX 10/soils and 9/waters
SDG # MFK888 REVIEWER (IF NOT ESD) ESAT
SOW# 7/88 REVIEWER'S NAME Youree Holloway
TPO: ACTION _____ FYI X COMPLETION DATE January 25, 1991
ACCT # 1TGBDN42 SF # TGBUZZ

SAMPLE NO.: MFK888, MFK889, MFK890, MFK891, MFK892, MFK893,
MFK894, MFK895, MFK896, MFK897, MFK898, MFK899, MFK900, MFK901,
MFK902, MFK903, MFK904, MFK905, MFK906

DATA ASSESSMENT SUMMARY

	ICP	AA	Hg	CYANIDE
1. HOLDING TIMES	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
2. CALIBRATIONS	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
3. BLANKS	<u>X</u>	<u>X</u>	<u>O</u>	<u>O</u>
4. ICS	<u>O</u>			
5. LCS	<u>O</u>	<u>O</u>		
6. DUPLICATE ANALYSIS	<u>X</u>	<u>X</u>	<u>O</u>	<u>O</u>
7. MATRIX SPIKE	<u>X</u>	<u>X</u>	<u>O</u>	<u>X</u>
8. MSA		<u>O</u>		
9. SERIAL DILUTION	<u>X</u>			
10. SAMPLE VERIFICATION	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
11. OTHER QC	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
12. OVERALL ASSESSMENT	<u>X</u>	<u>X</u>	<u>O</u>	<u>X</u>

O = Data had no problems/or qualified due to minor problems.

M = Data qualified due to major problems.

Z = Data unacceptable.

X = Problems, but do not affect data.

N/A= Not applicable

ACTION ITEMS: Blank concentrations were above the instrument detection limits; duplicate results exceeded quality control limits for eight analytes; matrix spike recoveries were outside of limits for six analytes in soil; a serial dilution difference exceeded the limit for one analyte in water; and furnace atomic absorption analytical spike recoveries exceeded limits for 28 of 76 determinations.

NOTABLE PERFORMANCE: All holding times, calibrations, and laboratory control samples, met quality control criteria.

**INORGANIC QA REVIEW
CONTINUATION PAGE**

Case 15522 SDG MFK888 Site Larry Landry Dump Lab Southwest (OK)

COMMENTS: Ten soils and nine waters were analyzed at low concentrations for total metals and cyanide. The data package is provisional because: blank concentrations were above the instrument detection limits; duplicate results exceeded quality control limits for eight analytes; matrix spike recoveries were outside of limits for six analytes in soil; a serial dilution difference exceeded the limit for one analyte in water, and furnace atomic absorption analytical spike recoveries exceeded limits for 28 of 76 determinations.

1. Holding Times

All holding time criteria were met.

2. Calibrations

All calibrations were acceptable.

3. Blanks

A. Calibration Blanks

The concentrations of silver in the calibration blanks were above the instrument detection limits (IDL) but less than the contract required detection limits (CRDL). Sample results greater than the IDL but less than five times the amount in any blank should be qualified as undetected (U).

The concentrations of aluminum and calcium in the calibration blanks were above the negatives IDLs. False negative are possible.

The concentrations of iron, selenium, and sodium in the calibration blanks were above both the negative and the positive IDLs.

B. Preparation Blank

1. Soil Samples

The concentrations of selenium and sodium in the preparation blank were above the negative IDLs. False negatives are possible.

2. Water Samples

The concentrations of aluminum, calcium, iron, and sodium in the preparation blank were above the negative IDLs. False negatives are possible.

C. All other blank results were acceptable.

4. ICS

Interference check sample criteria were met.

5. LCS

All laboratory control sample results were acceptable.

6. Duplicate Analysis

A. Soil Samples

1. The 2597.7 mg/Kg difference between duplicate magnesium results for the soil samples exceeded the technical limit of 2430.2 mg/Kg (twice the CRDL). The magnesium results in the soil samples are qualified as estimated (J).
2. The aluminum, barium, calcium, iron, lead, manganese, and zinc results for the soil samples are qualified as estimated (J) due to duplicate result differences of 49.8%, 41.9%, 122.2%, 36.7%, 43.0%, 122.5%, 67.2%, respectively.

B. All other duplicate results met technical quality control criteria.

7. Matrix Spike

A. Pre-digestion/Pre-distillation Matrix Spike Recovery

Soil Samples

- a) The antimony, thallium, and zinc results for the soil samples are qualified as unusable (R) due to pre-digestion matrix spike recoveries of 11.9%, 8.7%, and 22.8%, respectively. The antimony, thallium, and zinc concentrations reported for the soil samples are the lowest at which they are present. Matrix interference is suspected. False negatives are possible for antimony in MFK894, MFK897, MFK899 and for thallium in MFK888, MFK890, MFK894, MFK896, MFK897, MFK899, MFK900, MFK901, and MFK902.

- b) The arsenic and silver results for the soil samples are qualified as estimated (J and UJ) due to pre-digestion matrix spike recoveries of 64.1% and 67.3%. Matrix interference is suspected.

B. Furnace Atomic Absorption Quality Control

1. The arsenic result for MFK902 is qualified as estimated (J) due to a FAA analytical spike recovery of 80.8%. Matrix interference is suspected.
 2. The lead results for MFK889, MFK891, and MFK903 are qualified as estimated (UJ) due to FAA analytical spike recoveries of 116.6%, 116.9%, and 121.0%, respectively. Matrix interference is suspected.
 3. The selenium results for MFK889, MFK892, MFK893, MFK897, MFK898, MFK899, MFK900, MFK903, and MFK906 are qualified as estimated (J and UJ) due to FAA analytical spike recoveries of 122.9% to 157.0%. Matrix interference is suspected.
 4. The thallium results for MFK888, MFK890, MFK894, MFK899, MFK900, MFK901, MFK904, MFK905, MFK906 are qualified as estimated (UJ) due to FAA analytical spike recoveries of 41.3% to 77.3%. Matrix interference is suspected.
 5. The thallium results for MFK891, MFK892, MFK893, MFK895, MFK902, and MFK903 are qualified as estimated (UJ) because the FAA analytical spike recoveries were twice below 40% even when diluted. Matrix interference is suspected.
- C. All other analytes had acceptable pre-digestion/pre-distillation matrix spike recoveries and FAA quality control.

8. MSA

Method of standard addition results were acceptable.

9. Serial Dilutions

The zinc results for the soil samples are qualified as estimated (J) due to a serial dilution difference of 27.3%. Physical or chemical interference exist due to the sample matrix.

All other serial dilution results met quality control criteria.

10. Sample Verification

There should be a "X" in the selenium column on Form XIV for the determination at 1345 hours (page 100), not at 1210 hours (page 99). See pages 304 and 306.

11. Other QC

None

12. Overall Assessment

The data package is provisional for the following reasons:

- A. Blank concentrations were above the instrument detection limits.
- B. Duplicate results exceeded quality control limits for eight analytes.
- C. Matrix spike recoveries were outside of limits for six analytes in soil.
- D. A serial dilution difference exceeded the limit for one analyte in water.
- E. Furnace atomic absorption analytical spike recoveries exceeded limits for 28 of 76 determinations.

All other technical requirements were met.

**Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM**

Telephone/FAX Record Log

Date of Call: January 28, 1991
Laboratory Name: Southwest Labs of OK
Lab Contact: Steve Markham
Region: 6
Regional Contact: Youree Holloway (ESAT)
Call Initiated by: Region

In reference to data for the following sample numbers:

MFK888, MFK889, MFK890, MFK891, MFK892, MFK893, MFK894, MFK895,
MFK896, MFK897, MFK898, MFK899, MFK900, MFK901, MFK902, MFK903,
MFK904, MFK905, MFK906

Summary of Questions/Issues Discussed:

There should be a "X" in the selenium column on Form XIV for the determination at 1345 hours (page 100), not at 1210 hours (page 99). See pages 304 and 306.

Summary of Resolutions:

Lab will look into items and will submit data within ten working days.

Youree L. Holloway
Signature

1/28/91
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

NSI Technology Services Corporation
Environmental Sciences
ESAT Region 6

c/o US EPA 10625 Fallstone Road, Houston, TX 77099 (713) 983-2135

FACSIMILE COVER SHEET

Please deliver the following pages to:

Name Steve Markham

Firm Southwest Labs of OK

City Broken Arrow State OK

Telephone (918) 251-2858 Ext. _____

Fax Telephone No. (918) 251-2599 Ext. _____

Sender:

Name Youree Holloway

Date January 28, 1991 Time _____

Total Number of pages including this Cover Sheet 2

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MESSAGES: _____

Fax Model No. Panafax UF-620 Fax No. (713) 983-2248

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
EPA HOUSTON LABORATORY
10625 FALLSTONE ROAD
HOUSTON, TX 77099

RESUBMITTED DATA REVIEW REPORT

DATE: May 6, 1991 CASE #: 15522

SAS #: _____
TO: E. Sierra 6E-SH SDG #: MFK888
USEPA Region 6 SITE NAME: Larry Landry Dump
LAB NAME: Southwest (OK)
FROM: Youree Holloway
ESAT

EFFECTS OF RESUBMITTED INFORMATION ON THE ORIGINAL DATA:

Resubmitted data in response to CCS review does not effect region data review.

ATTACHMENT D

SAMPLE SUPPORT DOCUMENTATION



ecology and environment, inc.

1509 MAIN STREET, DALLAS, TEXAS 75201, TEL. 214-742-6601

International Specialists in the Environment

MEMORANDUM

TO: Ed Sierra, Region VI RPO

THRU: K. H. Malone, Jr., FITOM *extm*

FROM: *th* Thomas Lensing, FIT Biologist *J.S.*

DATE: January 2, 1990 TDD: F-06-8911-34
PAN: FLA0361PAA

SUBJECT: Preliminary Assessment for the Larry Landry Dump
Intracoastal City, Vermillion Parish, LA (LAD985169804)

I. Site Information

The Larry Landry Dump (LLD) is located off Louisiana Highway 333, one mile north of Intracoastal City, Vermillion Parish, Louisiana (Figure 1). The geographic coordinates are 29°47'52" north latitude and 92°09'03" west longitude. The site is located on private land owned by Mr. (b) (6) who leased part of the land to Mr. Larry Landry. Mr. Landry used the land as an open dump for various oil field and solid wastes from offshore drilling rigs (Reference 6).

The purpose of this investigation is to determine from the off-site reconnaissance inspection and data collection whether the site poses a threat to human health and the environment.

II. Background/Operating History

The LLD operated in the early 1980s. Operations were terminated at the site when the owner proposed raising the rent (Reference 6). Waste handling and disposal practices consisted of hauling the waste in a truck and indiscriminately dumping the waste on the ground (Figure 2, Reference 6).

(b) (6) a concerned citizen, and Mr. Paul Conzelmann of SUBRA Laboratories in New Iberia, Louisiana, conducted a sampling inspection at the site in 1984. Analysis of on-site soil and water samples indicated high concentrations of salt, oil, grease, barium, cadmium, chromium, lead and zinc. The samples were not analyzed for organic constituents.

(b) (6)

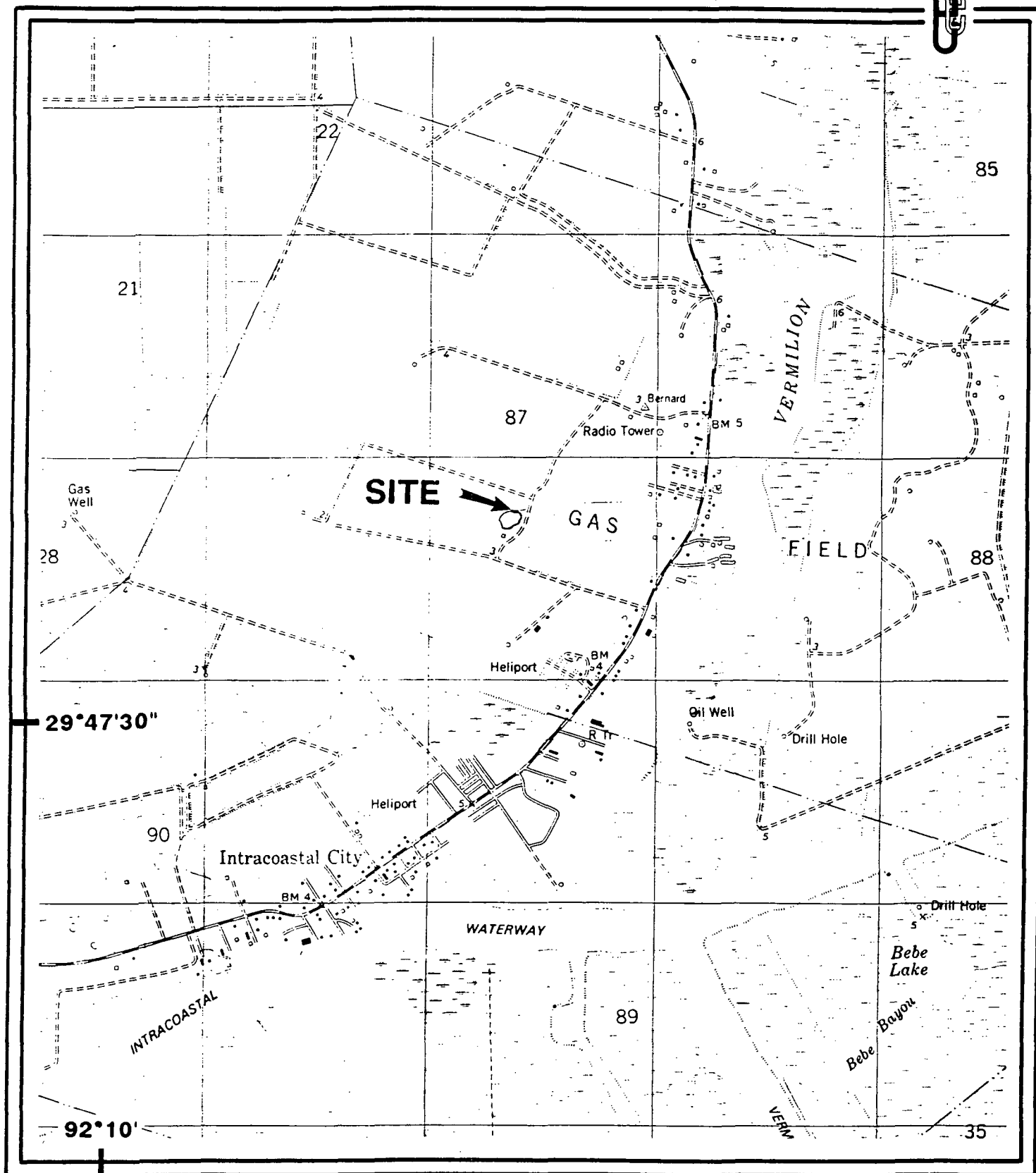
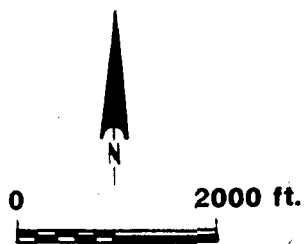


FIGURE 1
SITE LOCATION MAP
LARRY LANDRY DUMP
INTRACOASTAL CITY, LOUISIANA
LAD985169804



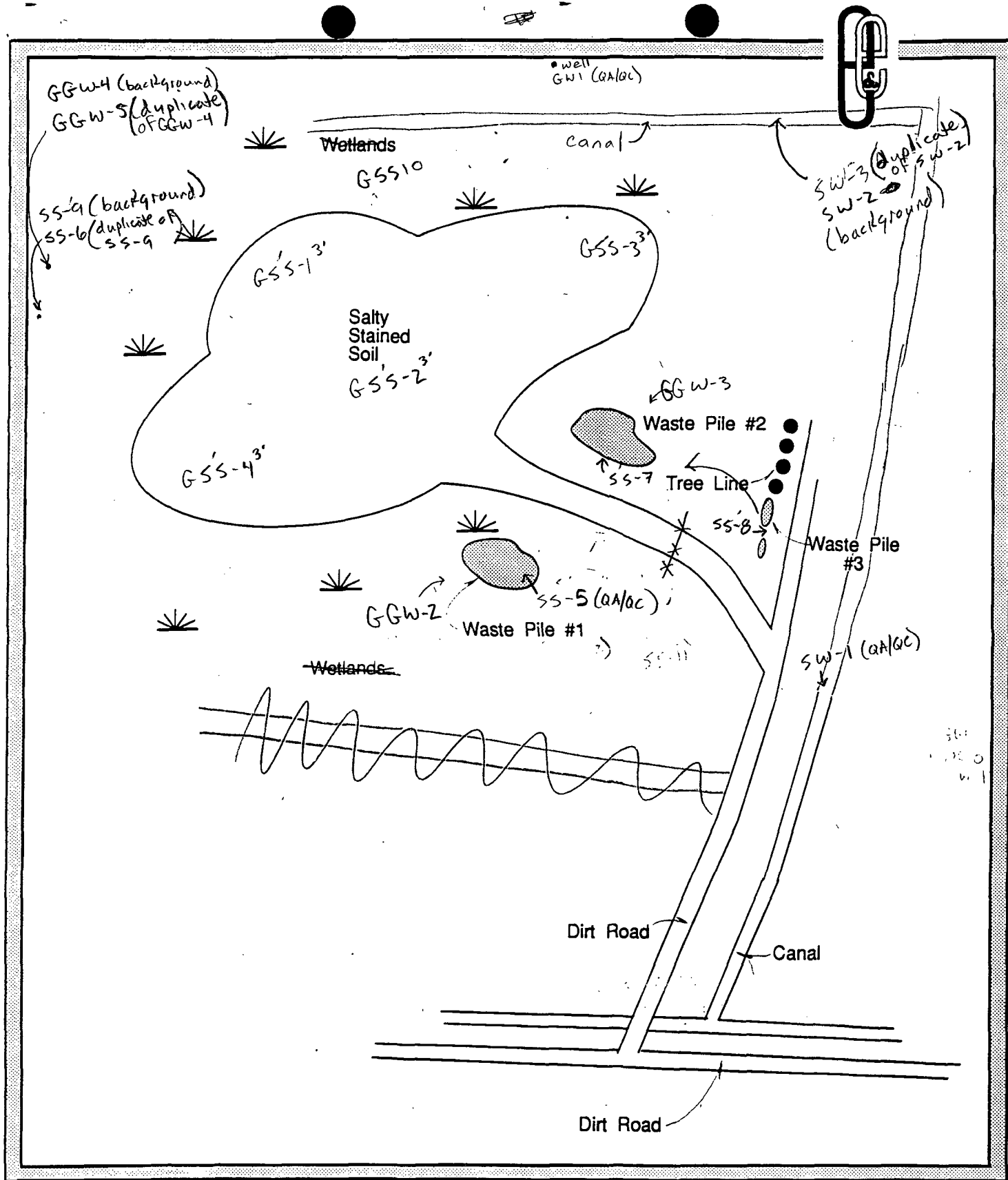


FIGURE 2
SITE SKETCH
 LARRY LANDRY DUMP
 INTRACOASTAL CITY, LOUISIANA
 LAD985169804

(Figure 2-1)
 Sampling locations

Not To Scale

An off-site reconnaissance inspection was conducted by Thomas Lensing of the FIT on November 14, 1989. (b) (6) and Mr. Conzelmann accompanied the FIT to the site. Due to a locked gate at the entrance, the FIT was unable to assess the condition of the site. (b) (6) and Mr. Conzelmann supplied the FIT with 1984 photographs of the site. A contact log and photographs are attached. The extent of involvement of Louisiana Department of Environmental Quality (LDEQ) is unknown.

III. Waste Containment/Hazardous Substance Identification

The site operated as an open dump for various solid and liquid wastes generated from offshore oil rigs. The site operator did not initiate any artificial means of containment from the air, ground water or surface water routes. The piles of waste were disposed directly onto the ground. The containers in which the wastes were placed are deteriorating (Photographs 4, 5, 6, 10).

IV. Pathway Characteristics

A. Air Pathway Characteristics

The site has been sampled only by (b) (6) and Mr. Conzelmann. Analysis of the samples revealed high concentrations of inorganic constituents such as barium, cadmium, chromium, lead and zinc. The gaseous and particulate mobility potentials of these contaminants are low. The site was not sampled for organics (Reference 7).

B. Ground Water Characteristics

The Chicot Aquifer system consists mostly of thick sand and gravel deposits that dip and thicken southward from southern Vernon and Rapides Parishes. The aquifer thins slightly to the west and continues into Texas. To the east, the aquifer thickens toward the axis of the Mississippi embayment trough where it is cut or overlain by the alluvium of the Atchafalaya and Mississippi Rivers; thus, the Chicot Aquifer system and the Atchafalaya aquifer are hydraulically connected (Reference 3, page 4).

East of Calcasieu Parish, the massive end of the Chicot Aquifer system has been divided into two units called the upper sand and the lower sand. The upper sand is connected to the Abbeville Unit (Reference 3, page 4). This shallow sand is a distinct hydrologic unit throughout most of the lower Vermillion River Basin. The thickness of sand usually ranges from 100 to 250 feet. Due to large scale ground water use for irrigation, the Vermillion River has been recharging the Chicot Aquifer near Bancker, five miles north of the site (Reference 3, page 21).

A geohydrologic cross section of the site's location revealed that the LLD is underlain by 200 feet of clay. Underlying the clay are 150 feet of freshwater sand. This is the Abbeville Unit (Reference 3, page 27-28).

The nearest well, located 2,200 feet east of the site, is owned by Ms. (b) (6) (b) (6) informed the FIT that her well was dug in

1975 to a depth of approximately 500 feet. The well casing is perforated at 500 feet. (b) (6) uses her well water for domestic purposes and purchases her own drinking water. Residential Well Sampling Information sheets are attached.

A net precipitation of 21.01 inches has been estimated (Reference 12).

C. Surface Water Characteristics

The site is surrounded by surface water (Photograph 1). Since waste disposal practices were poorly initiated and the operator made no effort to establish any run-on control, leachate migration from the site to the adjoining marsh is highly probable (Photographs 1-4, Reference 6). Contaminants from the site could enter surface water from any direction. The drainage would flow into a north-south ditch that parallels the access road. The drainage ditch empties into a west-east ditch that empties into the Vermillion River one-half mile downstream. The Vermillion River makes up the next five miles of the 15 mile segment. The final nine miles of the surface water pathway are in Vermillion Bay (Reference 2). The Vermillion River is designated usable for primary and secondary recreation and for propagation of fish and wildlife (Reference 9). Potential sensitive environments affected by the in-water segment consist of wetlands (estuarine), a state wildlife refuge and habitats used by the endangered Falco peregrinus anatum (peregrine falcon) and Lepidochelys kempii (Atlantic Ridley Turtle) (Reference 2; Reference 11).

The estimated upgradient drainage area is less than 50 acres (Reference 2). The FIT estimated that the Vermillion River and Vermillion Bay have an annual average stream flow of less than five cubic feet per second (cfs). The site is located in a 100 year flood plain (Reference 4). The two year, 24 hour rainfall is estimated at 5.5 inches (Reference 10).

D. On-Site Pathway Characteristics

During the reconnaissance inspection, a gate on the access road was locked and "No Trespassing" signs were posted. Inorganics are known to be present at the site and organic compounds could exist (Reference 7). The site owner made no effort to contain the wastes from the surrounding wetlands.

V. Targets

The Maximally Exposed Individual (MEI) for an air target is the (b) (6) residence. (b) (6) lives (b) (6) of the site. The population within four miles was estimated from a house count on a U.S.G.S. 7.5 Minute Topographic Map and by multiplying the number of houses times the most recent U.S. census factor for Vermillion Parish (2.98 people per household) (Reference 4). There are approximately 510 people within four miles of the site. Land use in the area consists of industrial with intermittent farmland (Reference 5). Estuarine wetlands

and habitats known to be used by endangered species, the Peregrine Falcon and the Atlantic Ridley Turtle, are within four miles of the site (Reference 2; Reference 11).

The (b) (6) residence also represents the MEI for ground water. It is believed that all residents within four miles of the site obtain water from private wells. Ground water is also used for irrigation of rice and crawfish farms (Reference 3, p. 21, 5).

Ground water that supplies the residential and irrigation wells is drawn from the Chicot Aquifer, which is designated as a Sole Source Aquifer (Reference 8). There are no drinking water intakes within the 15 mile in-water segment. The Vermillion River is deemed usable for primary and secondary recreation and for propagation of fish and wildlife (Reference 9). There is no on-site resident population. "No Trespassing" signs are posted along the access road. The site is completely surrounded by surface water (Photograph 1).

VI. Conclusions

The LLD was used as an open dump for various solid and liquid oil field wastes. The wastes were indiscriminantly dumped directly onto the ground. The site operator made no effort to contain the wastes from the surrounding wetlands. Photographs indicate that most of the wastes are stored in corroding and deteriorating drums. The site was sampled for inorganics. High levels of barium, cadmium, chromium, lead and zinc have been detected. No organic analysis was conducted. The closest residence is the home of (b) (6) who operates the closest ground water well. Ground water is used for domestic and irrigation purposes. The water is drawn from the Chicot Aquifer, which is designated as a Sole Source Aquifer in southwestern Louisiana. Surface water is deemed usable for primary and secondary recreation and for propagation of fish and wildlife. Along the 15 mile migration pathway, surface water encounters wetlands, a state wildlife refuge and habitat used by the endangered Peregrine Falcon and Atlantic Ridley Turtle.

The FIT was unable to acquire documentation of other regulatory involvement. The extent to which the LDEQ was involved with the site is unknown.

RESIDENTIAL WELL SAMPLING INFORMATION

Well #

1. Name, address and phone number of resident (include county and zip code)

(b) (6)

Vermillion Parish

2. Date well was dug 1975

3. Depth of well 500 feet

4. Depth to static water Unknown

5. Is the well cased? Yes ☒ No ☐ Unknown ☐

If so, to what depth? Unknown

What type of casing is used? Stainless Steel

6. Is well screened? Yes ☒ No ☐ Unknown ☐

7. Is the well used for residential purposes, or for watering livestock?

The well water is used for all domestic purposes except for drinking.

8. Any other pertinent information?

Ms. Hebert purchases her drinking water.

RESIDENTIAL WELL SAMPLING INFORMATION

Well #

1. Name, address and phone number of resident (include county and zip code)

Danny Richard

Route 3, Box 984

Abbeville, LA 70510

(318) 893-0280

2. Date well was dug Unknown

3. Depth of well 500 feet

4. Depth to static water Unknown

5. Is the well cased? Yes No Unknown x

If so, to what depth? N/A

What type of casing is used? Unknown

6. Is well screened? Yes x No Unknown

7. Is the well used for residential purposes, or for watering livestock?

Well water is used for cooking, bathing, etc. Not for drinking.

8. Any other pertinent information?

Mr. Richard purchases his own drinking water.



STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
OFFICE OF PUBLIC WORKS



WATER RESOURCES
TECHNICAL REPORT
NO. 33

THE OCCURRENCE OF HIGH CONCENTRATIONS OF
CHLORIDE IN THE CHICOT AQUIFER SYSTEM
OF SOUTHWESTERN LOUISIANA

Prepared by
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
In cooperation with
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
OFFICE OF PUBLIC WORKS

1984

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
OFFICE OF PUBLIC WORKS

Water Resources
TECHNICAL REPORT NO. 33

THE OCCURRENCE OF HIGH CONCENTRATIONS OF CHLORIDE
IN THE CHICOT AQUIFER SYSTEM OF SOUTHWESTERN LOUISIANA

By
Dale J. Nyman
U.S. Geological Survey

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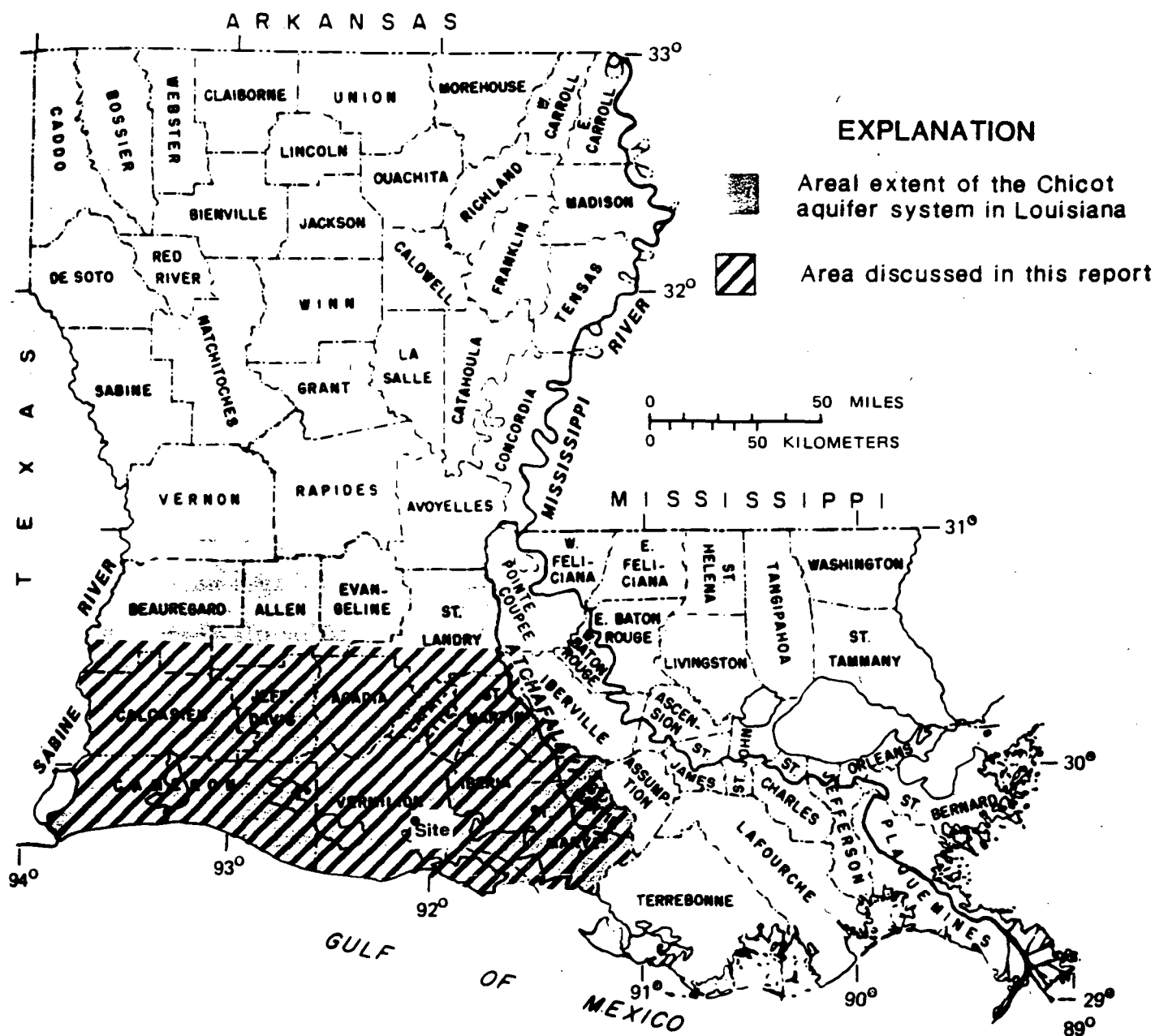


Figure 1.--Location of project area.

(deceased) formerly of the Department of Environmental Sciences at Louisiana State University, and to Mr. R. H. Wallace, Jr. of the Gulf Basin Hydrogeology Project (U.S. Geological Survey). Mr. R. M. Lawrence, Offshore Division Geologist for AMOCO, New Orleans office, and Mr. Fines Martin, Division Manager for Superior Oil Co. at Lafayette, Louisiana, provided information for the hydrogeologic sections. Historical insight was provided by Mr. H. G. Chalkley (deceased) of the Sweetlake Land and Oil Co., and by Mr. V. S. Scoggins (deceased), founder of Coastal Water Wells, Inc., of Welsh, Louisiana.

Special appreciation is expressed to D. G. Sheppard, S. T. Mumme, and J. R. McKay; formerly graduate students at Northeast Louisiana University, Louisiana State University, and Louisiana Technical University, respectively; who assisted in the preparation of the geohydrologic maps.

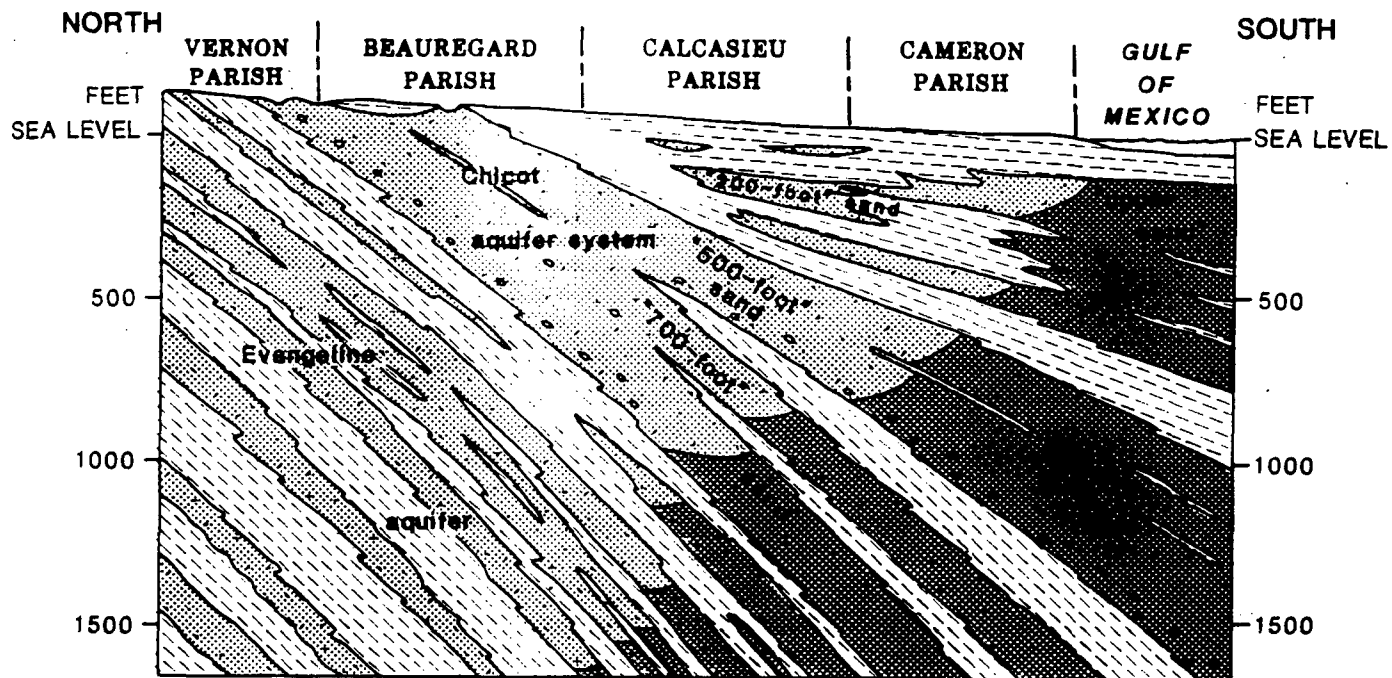
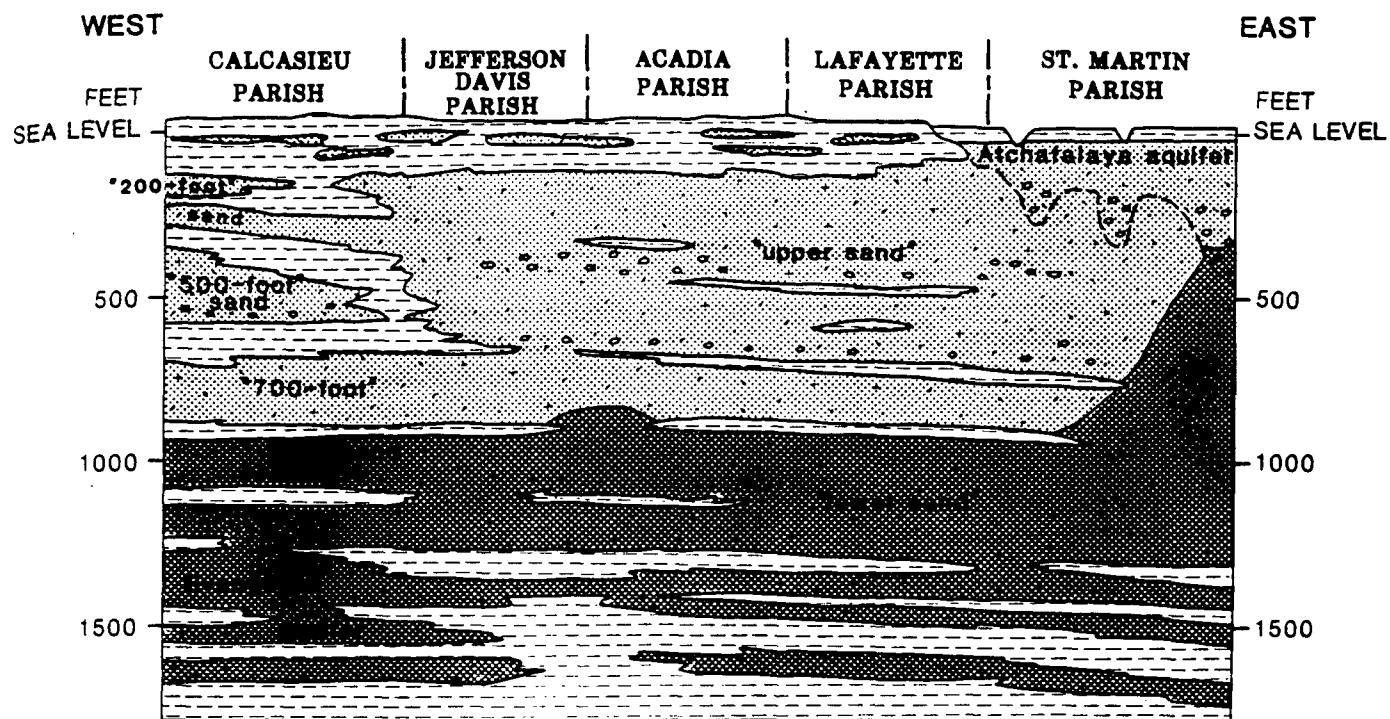
This study was made through a cooperative program between the U.S. Geological Survey and the Louisiana Office of Public Works, Department of Transportation and Development. Electrical logs of oil-test wells were made available by the Louisiana Office of Conservation, Department of Natural Resources, and the U.S. Geological Survey, Conservation Division (now Minerals Management Service).

CHICOT AQUIFER SYSTEM

The Chicot aquifer system, as used in this report, is a massive sand in the outcrop area and the northern half of the project area; it is divided downdip into two or more sand layers separated by clay beds. East of Calcasieu Parish the massive sand of the Chicot aquifer system has been divided into two units called the "upper sand" and "lower sand"; whereas in Calcasieu and Cameron Parishes, the massive sand has been divided into three units called the "200-foot", "500-foot", and "700-foot" sands (table 1). The "upper sand" is connected to the "200-foot" sand, Abbeville unit, and Atchafalaya River alluvium; thus, together these units constitute essentially one hydrologic unit. The "lower sand" is connected to the "700-foot" sand. The "500-foot" sand is largely isolated except where it merges with the "700-foot" sand toward the outcrop area (fig. 2).

Geohydrology

The Chicot aquifer system was named by Jones and others (1954, p. 7) for a deltaic sequence consisting mostly of thick sand and gravel deposits that dip and thicken southward from southern Vernon and Rapides Parishes. The aquifer thins slightly to the west and continues into Texas. To the east the aquifer thickens toward the axis of the Mississippi Embayment trough where it is cut by or overlain by the alluvium of the Atchafalaya and Mississippi Rivers; thus, the Chicot aquifer system and Atchafalaya aquifer are hydraulically connected. The aquifer units thicken gulfward but become increasingly subdivided by clays and individual sand beds may thin and become finer textured.



0 20 40 MILES
0 20 40 KILOMETERS

EXPLANATION

Freshwater sand
 Saltwater sand
 Mostly clay

Figure 2.--Idealized geologic sections through southwestern Louisiana.

regional subsurface correlation of terrace formations is not obvious, therefore the names "upper sand" and "lower sand" are used to designate units of the Chicot aquifer system in the eastern part of the report area.

Ground-Water Hydrology

Water Levels

Water levels in the Chicot aquifer system have ranged from near land surface to about 150 ft below land surface. Water levels are lowest in the Lake Charles industrial area and highest near rivers in the recharge area (pl. 1).⁴ Annual water-level fluctuations range from 2 to 3 ft in essentially unpumped areas in parts of Beauregard and Allen Parishes and from 20 to 40 ft near pumping centers for rice irrigation in Jefferson Davis and Acadia Parishes. Total pumpage from the Chicot aquifer system averaged about 1 Bgal/d in 1980 (Walter, 1982). Centers of concentrated pumping cause cones of depression in the potentiometric surface of the aquifer that induce the flow of water from all directions causing a slope (gradient) in the water-level surface toward the area of heavy pumping. The slope of the water-level surface is indicative of the rate of ground-water movement; the steeper the slope the faster ground water moves through the aquifer, assuming aquifer transmissivity and other factors are constant.

Water levels in wells tapping the "200-foot", "500-foot", and "700-foot" sands in the Lake Charles area are significantly different near pumping centers. Levels of the "200-foot" sand are the nearest to land surface, levels of the "500-foot" sand generally are farthest below land surface, and the water level in the "700-foot" sand is generally intermediate. Drawdown of the potentiometric surface of the "500-foot" sand was primarily caused by industrial ground-water withdrawals, which averaged about 100 Mgal/d during 1980 (Walter, 1982). The center of the drawdown cone in the "200-foot" sand is primarily related to withdrawals of water from the "500-foot" sand and leakage between the two sands. The cone of depression for the "700-foot" sand is caused by ground-water withdrawals averaging about 10 Mgal/d and leakage to the "500-foot" sand.

The water-level map for 1903 (Jones and others, 1954, pl. 17; 1956, pl. 13) shows the natural southward gradient that probably existed before extensive ground-water development began. Rain falling on the recharge areas of the Chicot aquifer system during pre-development years provided base flow to the Sabine, Vermilion, and Atchafalaya Rivers (and other coastal streams) and also created the hydrostatic pressure that flushed saltwater southward and stabilized the saltwater wedge in the coastal area.

⁴ The regional potentiometric map is based on the massive sand in the northern part of the area, the "upper sand" in the coastal area, and the "200-foot" sand in the Lake Charles area.

The water-level gradients that sloped southward in 1900 have now been reversed in the coastal area and slope northward toward pumping centers in Calcasieu, Jefferson Davis, and Acadia Parishes (pl. 1). The northward gradient is very low (generally less than 1 ft/mi) in the coastal wetlands area because of little pumping and because of recharge from vertical leakage. Because of these factors, the northward movement of the freshwater-saltwater interface has been very slow and probably averages less than 100 ft/yr in the gulf coast area. However, a potentially serious problem may develop if the water-level gradient near the coast is increased. Saltwater encroachment, which has occurred in the Texas-Gulf region at Houston and Orange (Baker and Wall, 1976, p. F21; Gabrysch and McAdoo, 1972, p. 10), could render large parts of the Chicot and other aquifers unusable.

Water Movement

Ground water moves from areas of recharge to areas of discharge, which under current conditions coincide with pumping centers. The recharge areas are indicated by the large patterned area of the water-level map (pl. 1); the pumping centers are generally located in areas indicated by closed contours. Water pumped in southwestern Louisiana may originate as rain falling on the outcrop area to the north, as flow from the Atchafalaya River to the east, or as water moving downward through the clays to the Chicot aquifer system from marshlands in the coastal area to the south. There is very little movement of ground water from the west toward Lake Charles because of pumping at Orange, Texas. Additional recharge is received through direct interconnections with underlying aquifers (Whitfield, 1975, p. 12), or directly from streams, such as the Calcasieu River in the reach above Kinder and the Vermilion River in the reach below Abbeville.

Recharge from the outcrop area in Beauregard and Allen Parishes and areas to the north supplies about 50 percent of the total water pumped from the Chicot aquifer system, and most of the water pumped in Calcasieu and Jefferson Davis Parishes, according to analog-model studies (A. L. Zack and A. N. Turcan, written commun., 1975). Recharge to the aquifer from the outcrop area in Evangeline Parish supplies less than 5 percent of the total water pumped. The amount of flow through Evangeline Parish is small because an east-west trending zone of low transmissivity (Fader and Harder, 1954) north of Ville Platte inhibits ground-water movement. On the water-level map (pl. 1) this zone is indicated by closely spaced water-level contours in central Evangeline Parish. In general, therefore, the amount of recharge in the outcrop area to the north is not determined solely by the amount of rainfall, but also by the aquifer's ability to transmit the water away from the recharge area.

The Atchafalaya aquifer (Jones and others, 1956 p. 293) and the Chicot aquifer system are essentially one continuous hydrologic unit from St. Landry Parish to near St. Martinville. Water levels in the Atchafalaya River alluvium change with river stage. Water levels are higher in the alluvium, causing water to move down gradient to the west into the Chicot aquifer system. The water-level map (pl. 1) indicates recharge from the Atchafalaya alluvium because of the essentially north-

base of freshwater to minimize saltwater coning. Further ground-water development in most of eastern Cameron Parish for domestic use and small municipal and industrial supplies should cause no significant changes in the rate of saltwater movement, but large industrial development should be carefully studied as saltwater encroachment could shorten the life of the water supply.

The aquifers in most of the western half of Cameron Parish probably have contained saline water since the sediments were deposited.

High-Chloride Water in the Lower Vermilion River Basin

The lower Vermilion River basin is the location of unique saltwater problems in the Abbeville unit and in the "upper sand" of the Chicot aquifer system (table 1). Salinity problems are not related to offshore saltwater encroachment, but represent local saltwater problems caused by: (1) movement of saltwater from the Vermilion River into the Abbeville unit, and (2) the upward movement of salty water from the "lower sand" into the "upper sand," which is increasing owing to pumping.

Abbeville unit.--The Abbeville unit of the Chicot aquifer system is the "shallow sand" described by Harder, and others (1967, p. 35). They stated, "This shallow sand is a distinct hydrologic unit throughout most of the [lower Vermilion River] basin and generally consists of fine to sandy silt at the top and grades downward within a few tens of feet into sand and gravel. The thickness of the sand usually ranges between 100 to 250 feet." Before large-scale irrigation began, ground-water discharge from the Abbeville unit supplied the base flow of the Vermilion River. However, because of ground-water withdrawals in Vermilion Parish and parishes to the north, water levels in the Abbeville unit gradually declined below the channel of the Vermilion River. By 1951, the river began recharging the aquifer in the Bancker area (fig. 7). Since that time brackish water has infiltrated the Abbeville unit on the infrequent occasions when brackish water was pushed that far upstream (Harder and others, 1967, p. 37-40). The saline-water contribution from the Vermilion River to the Abbeville unit has been very small in the Bancker area and the saline water that has infiltrated is being slowly flushed out. (See chlorograph of well Ve-626, fig. 8.) The Vermilion River at Bancker contains water of more than 200 mg/L chloride only 15 percent of the time (fig. 9). Flushing action (decreasing salinity) will continue until either the chloride concentration in the aquifer reflects the average annual chloride concentration of the river, the infiltration of rainwater continues to locally dilute the salty water in the aquifer, or saline water again recharges the aquifer in the Bancker area following an unusual hydrologic event, such as a series of very high tides accompanying storms. After the high tides occur, the flushing (or dilution) phase will be repeated.

The Abbeville unit in the reach of the Vermilion River between Little Bayou and the mouth is being recharged by brackish water more frequently than in the Bancker area because of tides bringing brackish water upstream during periods of low stream flow. Because of this the

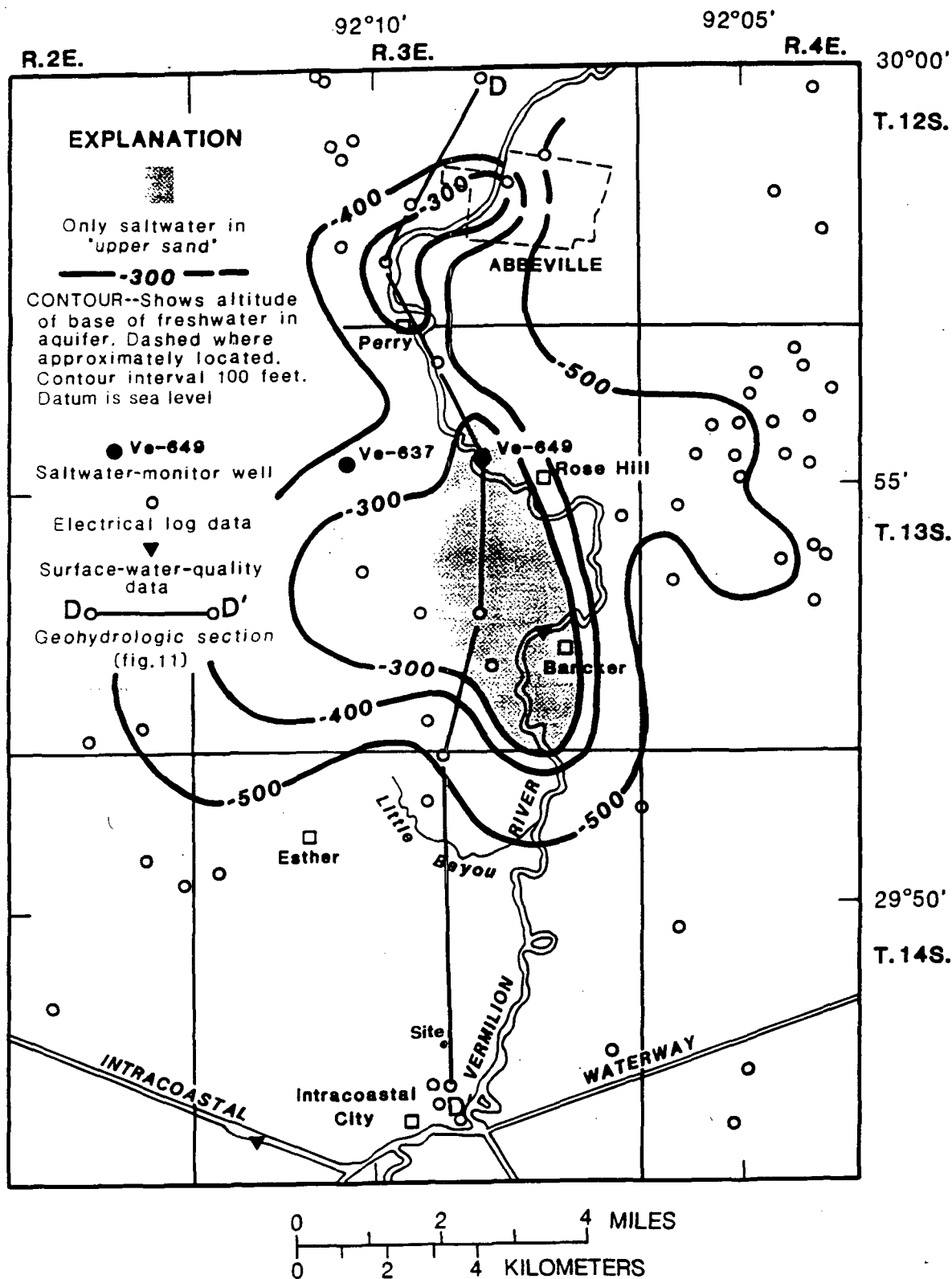


Figure 10.--Base of freshwater in the "upper sand" in the lower Vermilion River basin.

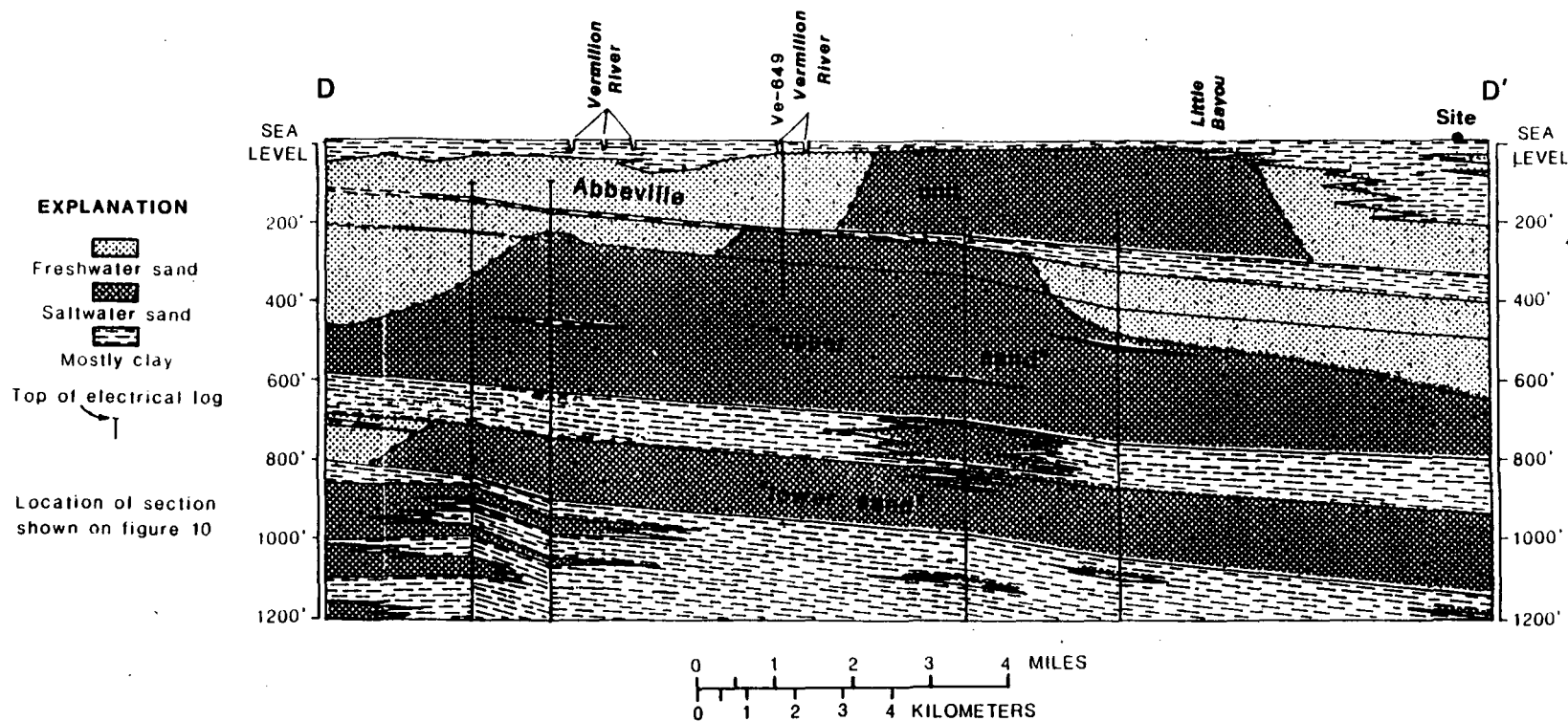


Figure 11.--North-south geohydrologic section along lower Vermilion River.

A line of wells injecting freshwater near the toe of the freshwater-saltwater transition zone, or in an area where the base of freshwater has a steep gradient, has the local effect of reducing or reversing the water-level gradient and generally slowing or temporarily stopping saltwater encroachment. The major drawback to injection wells is the cost of treating the injection water and the cost of maintaining the wells. (See Bruington and Seares, 1965.)

SUMMARY AND CONCLUSIONS

Saltwater encroachment is a potential problem in the three most heavily pumped units of the Chicot aquifer system--the "upper sand" east of Lake Charles and the "500-foot" and "700-foot" sands of the Lake Charles industrial area. Ground-water withdrawals have created pumping cones in all three aquifers, reversing the natural southerly gradients in the coastal areas. These reversed gradients are causing a very slow northward movement of the freshwater-saltwater interface, and some of the saltwater-monitor wells have shown a significant increase in chloride concentration.

This slow rate of saltwater movement is primarily caused by water-level gradients of less than 1 ft/mi in the coastal zone (wetlands areas and offshore). The gradients are low because of vertical recharge and the relatively small amount of ground-water development in the wetland areas.

Although there has been little change in chloride concentration, some areas of the "upper sand" are very susceptible to encroachment--such as along the Atchafalaya River basin near New Iberia, in western Vermilion Parish south of Gueydan, and along the Vermilion River south of Abbeville. In north-central Cameron Parish chlorides have increased more than 20 (mg/L)/yr at well Cn-92, primarily in response to irrigation pumping. The saltwater front is currently essentially static; but if pumping for rice irrigation increases significantly causing additional water-level declines, the northward movement of the saltwater will accelerate. Freshwater resources in areas irrigated for rice in southern Calcasieu and Jefferson Davis Parishes could deteriorate with the northward movement of saltwater.

Water-level declines in the rice-growing area increase the differential artesian pressure between the saline Chicot "lower sand" and the freshwater "upper sand," thereby increasing the movement of salty water upward through openings in the confining layer separating the two aquifers. Existing saltwater highs are now enlarging at a faster rate in response to water-level declines caused mostly by irrigation pumping. Local saltwater mounds and ridges, for example in Vermilion Parish, are enlarging in response to this mechanism.

The Abbeville unit of the Chicot aquifer system in Vermilion Parish has reflected the quality of water in the Vermilion River since water levels in the aquifer were drawn down below the river level. Near Bancker

the Abbeville unit generally is recharged by freshwater more than 85 percent of the time; however, high tides may cause inland movement of seawater in the river and the temporary recharge of brackish water into the aquifer. This brackish water is then diluted and the salinity reduced because of recharge by the fresh river water that follows.

The Abbeville unit near Intracoastal City is also recharged directly from the Vermilion River. Because this area is near the mouth of the Vermilion River, the river water contains chloride concentrations exceeding 1,000 mg/L more than 4 months each year, generally during the low-flow season (August-November). This brackish water has been recharging the aquifer since 1951. The nearly continuous recharge of brackish water since that time has caused a saltwater body to grow beneath the river. Currently (1983), chloride concentrations are increasing 30 (mg/L)/yr north of the mouth of the Vermilion River and 5 (mg/L)/yr to the east, but there is probably saltwater movement in all directions. If current conditions continue, salty water in the Abbeville unit will begin moving into the "upper sand," which provides water to most of the high-capacity wells in the area. Saltwater recharge will continue along the Vermilion River until the upstream movement of brackish water from Vermilion Bay is controlled.

Increases in salinity of water in the "500-foot" sand of the Lake Charles industrial area are not related to coastal saltwater encroachment. The increases are mostly the result of vertical movement of saltwater from the "700-foot" sand related to changes in water level caused by pumping. The increases in chloride concentration noted by industries after 1970 were primarily caused by water-level declines from 1967 to 1969. Saltwater in the "700-foot" sand is moving laterally in response to pumping, and northward saltwater encroachment is evident in the lower half of Calcasieu Parish. The largest increase in chloride concentration observed to date (1982) is 25 (mg/L)/yr within the southern city limits of Lake Charles at well Cu-767. The lowest chloride concentration was 370 mg/L during 1965 and the highest 770 during 1981-82. The use of Sabine River water to replace ground-water withdrawals should lessen saltwater problems in the Lake Charles area.

Most of the current saltwater problems in the project area result from saltwater coning--where large-capacity wells tap a sand that contains saltwater at the base of the sand unit. Wells screened above the coastal freshwater-saltwater interface, and wells screened above local inland saltwater bodies, may have upcoming problems. Such problems have been best documented locally in Vermilion, Jefferson Davis, and Calcasieu Parishes, but may occur near the freshwater-saltwater interface in all of the major sand units. Inland saltwater bodies include an area of at least 150 mi², and affected wells typically yield water having a chloride concentration of 50 to 500 mg/L.

MITRE

26 May 1988
W52-219

Ms. Lucy Sibold
U.S. Environmental Protection Agency
401 M Street, S.W.
Room 2636, Mail Code WH-548A
Washington, D.C. 20460

Dear Ms. Sibold:

Enclosed is a copy of the draft revised HRS net precipitation values for 3,345 weather stations where data were available. The data are presented by state code, station name, latitude longitude, and net precipitation in inches. A list of state codes is also enclosed.

The net precipitation values are provided to assist the Phase II - Field Testing efforts. It is suggested that the value from the nearest weather station in a similar geographic setting be used as the net precipitation value for a site.

If there are any questions regarding this material, please contact Dave Egan at (703) 883-7866.

Sincerely,



Andrew M. Platt
Group Leader
Hazardous Waste Systems

AMP:DEE/hme

Enclosures

cc: Scott Parrish

OBS	STATE	NAME	LATNUM	LONGUM	NETPREC
1046	15	SCOTTSDALE 3 SSW	36.44	86.13	24.5491
1047	15	MAYFIELD RADIO WNGO	36.47	88.38	25.3755
1048	15	BAXTER	36.51	83.20	23.6126
1049	15	HOPKINSVILLE	36.51	87.30	24.3419
1050	15	BARBOURVILLE	36.52	83.53	23.3151
1051	15	RUSSELLVILLE	36.52	86.53	26.2493
1052	15	SUMMER SHADE	36.53	85.43	23.9527
1053	15	BOWLING GREEN FAA AP	36.58	86.26	23.4509
1054	15	LOVELACEVILLE	36.58	88.50	22.9992
1055	15	MANCHESTER 4 SE	37.06	83.43	22.4824
1056	15	PADUCAH SEWAGE PLANT	37.06	88.36	20.2830
1057	15	SOMERSET 2 N	37.07	84.37	23.3421
1058	15	PRINCETON 1 SE	37.07	87.52	22.5323
1059	15	MAMMOTH CAVE PARK	37.11	86.05	24.6686
1060	15	GREENSBURG	37.15	85.30	23.8502
1061	15	CAMPBELLSVILLE 2 SSW	37.19	85.22	22.6528
1062	15	MADISONVILLE 1 SE	37.19	87.29	20.9180
1063	15	BEAVER DAM	37.25	86.52	20.2457
1064	15	JACKSON WSO AP	37.26	83.19	19.7651
1065	15	FORDS FERRY DAM 50	37.28	88.06	18.8130
1066	15	LEITCHFIELD 2 N	37.31	86.18	22.2079
1067	15	BEREA COLLEGE	37.34	84.18	19.6143
1068	15	DANVILLE	37.39	84.46	21.4832
1069	15	HENDERSON 7 SSW	37.45	87.38	18.9768
1070	15	OWENSBORO 2 W	37.46	87.09	20.4014
1071	15	BARDSTOWN	37.48	85.28	21.1779
1072	15	WEST LIBERTY	37.55	83.15	19.7645
1073	15	LEXINGTON WSO	R 38.02	84.36	19.7394
1074	15	MOUNT STERLING	38.04	83.56	19.7741
1075	15	FARMERS 1 WNW	38.09	83.33	18.7360
1076	15	LOUISVILLE WSO	R 38.11	85.44	19.3259
1077	15	SHELBYVILLE	38.13	85.16	20.0068
1078	15	FRANKFORT LOCK 4	38.14	84.52	18.9018
1079	15	ANCHORAGE	38.16	85.32	21.4009
1080	15	ASHLAND	38.27	82.36	16.5790
1081	15	VANCEBURG	38.35	83.20	18.1494
1082	15	WILLIAMSTOWN 3 NW	38.39	84.37	18.9310
1083	15	MAYSVILLE SEWAGE PLANT	38.41	83.47	19.6983
1084	15	CARROLLTON LOCK 1	38.41	85.11	16.9412
1085	15	COVINGTON WSO	R 39.04	84.40	17.0404
1086	16	HOUMA	29.35	90.44	21.5182
1087	16	MORGAN CITY	29.41	91.11	20.9248
1088	16	VERMILION LOCK	29.47	92.12	21.0188
1089	16	FRANKLIN 3 NW	29.49	91.33	21.2264
1090	16	HACKBERRY 8 SSW	29.53	93.25	16.9338
1091	16	N O AUDUBON WSO	R 29.55	90.08	19.8387
1092	16	NEW ORLEANS MOISANT WSO	29.59	90.15	20.6237
1093	16	LAKE ARTHUR 10 SW	30.00	92.48	19.1572
1094	16	NEW IBERIA 5 NW	30.03	91.53	17.5543
1095	16	RESERVE	30.04	90.34	22.6758
1096	16	DONALDSONVILLE 3 E	30.06	90.56	21.1444
1097	16	LAKE CHARLES WSO	30.07	93.13	16.1362
1098	16	CARVILLE 2 SW	30.12	91.07	20.3079
1099	16	LAFAYETTE FAA AIRPORT	30.12	91.59	19.2050
1100	16	JENNINGS	30.15	92.40	21.2286

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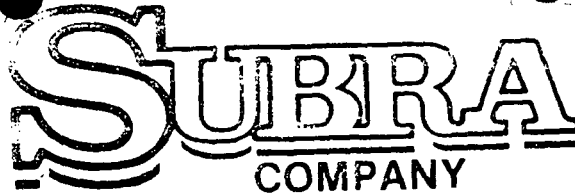
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RECORD OF COMMUNICATION	(Record of Item Checked Below)	
	<input checked="" type="checkbox"/> Phone Call <input type="checkbox"/> Discussion <input type="checkbox"/> Field Trip <input type="checkbox"/> Conference <input type="checkbox"/> Other(Specify)	
To: Elray Schexnaider J.E. Schexnaider & Assoc. Abbeville, LA (318) 893-8397	From: Thomas A. Lensing, Jr. <i>FOR</i> FIT biologist <i>JS</i>	Date: 12-4-89
		Time: 11:05
SUBJECT: Land Use and Soil Types in the Area of Larry Landry Dump		
SUMMARY OF COMMUNICATION		
Q: Could you tell me what the land is used for in the area around the dump?		
Q: Mostly industrial with intermittent farmland. The industry consists		
of off-shore oil and gas support facilities. The farmlands are used to		
grow rice and crawfish.		
Q: What are the hydrologic characteristics of the soils?		
A: Not much is known about it. I would say that the soils in the wetlands		
have a high runoff potential whereas the soils in the wooded areas would		
have a low runoff potential.		
CONCLUSIONS, ACTION TAKEN OR REQUIRED		
INFORMATION COPIES		
TO:		

RECORD OF COMMUNICATION	(Record of Item Checked Below) <input type="checkbox"/> Phone Call <input checked="" type="checkbox"/> Discussion <input type="checkbox"/> Field Trip <input type="checkbox"/> Conference <input type="checkbox"/> Other(Specify)	
	To: (b) (6) and Paul Conzelmann From: Thomas A. Lensing, Jr. FOR FIT Biologist <i>JS</i>	Date: 11-14-89 Time: 12:00
SUBJECT: Larry Landry Dump		
SUMMARY OF COMMUNICATION		
I asked (b) (6) and Mr. Conzelmann to summarize the site's history and operations.		
The land is owned by (b) (6) leased part of his land to Larry Landry. Mr. Landry used the land as a dump for various oil field wastes. The site operated for a couple of years in the early 1980s. Mr. Landry used a truck with an 18 yard bed, like a garbage truck, to haul and dispose of the waste.		
When (b) (6) raised the rent on leasing his land, Mr. Landry abandoned the site.		
Waste handling and disposal practices used by Mr. Landry were minimal.		
The waste was indiscriminately dumped on the ground. There were no containment structures on-site.		
CONCLUSIONS, ACTION TAKEN OR REQUIRED		
INFORMATION COPIES TO:		



NO. 11 SOUTHWEST DRIVE • SOUTHWEST INDUSTRIAL PARK • P. O. BOX 9813 • NEW IBERIA, LA. 70562-9813 • (318) 367-2216

August 17, 1984

(b) (6)

Dear Johnny:

Subra Company personnel at your request met in Intracoastal City with yourself and (b) (6) on the morning of August 14, 1984. (b) (6) then provided access to and led the above mentioned people onto a portion of his land in the Intracoastal City area which he designated as the site previously leased to Larry Landry for disposal of waste. (b) (6) then gave a general description of the area and the method used to dispose of the waste. Subra Company personnel looked over the site and designated sampling locations.

The results of the analyses performed on the samples collected from the site are enclosed. Samples of soil were collected by boring with a hand euger and digging with hand tools until a layer of solid material hampered further excavation. The soil samples ranged from one-foot composite samples to samples of 18". The solid waste on the site was visible on the surface in some areas and buried up to 18 inches deep in other areas. The results of the soil samples indicate contamination of the soil by excessive levels of salt, oil and grease, barium, cadmium, chromium, lead, and zinc.

Samples of water were collected from the marsh on the southeast side of the site, from a surface depression on the southwest side of the barren area, and from the ground on the northeast corner of the barren area. The ground on the northeast corner of the barren area gave way under the weight of a man. An excavation of the area resulted in groundwater being encountered at 15". The results of the water samples indicate contamination of the surface water in the barren area by salt, oil and grease, and barium. The marsh sample indicated the surface water salt concentration was not due to tidal influence but leaching from the soil on which it had collected, presumably due to rainfall. The groundwater sample was contaminated by excessive levels of salt, oil and grease, barium, cadmium, chromium, lead, and zinc. According to the criteria for hazardous waste, the groundwater which is a leachate on the site exceeds the toxicity levels established for barium, cadmium, chromium, lead, and zinc. This would indicate the waste at the site is hazardous.

August 17, 1984

A pile of exposed drums was present on the site and around the base of an oak tree 500 feet southeast of the barren area. The drums southeast of the area contained substantial quantities of waste as well as some contained collected rainwater. Samples were collected of rainwater in the drums, a black solidified tar-like material on the ground, and the ground saturated with the waste. The salt content of the tar-like material and the ground were extremely elevated. The rainwater had leached some salt and oil and grease from the drum contents.

In summary, the soil and water samples indicate the site contains waste with high concentrations of salt, oil and grease, barium, cadmium, chromium, lead, and zinc. The extent of the contamination both vertically and horizontally cannot be determined by this initial survey of the area. Also, the possibility of contamination by organic compounds should be investigated.

The samples will be retained should you require additional parameters be analyzed.

Sincerely,

Wilma Subra
President

m)

Enclosures

cc: (b) (6)

Chemical Analyses of Soil Samples Collected August 14, 1984 From a Site
Previously Leased to Larry Landry in Intracoastal City for Disposal of Waste

<u>Location</u>	<u>Salt</u> <u>(ppm)</u>	<u>pH</u>	<u>Oil & Grease</u> <u>(ppm)</u>	<u>Barium</u> <u>(ppm)</u>	<u>Cadmium</u> <u>(ppm)</u>	<u>Chromium</u> <u>(ppm)</u>	<u>Lead</u> <u>(ppm)</u>	<u>Zinc</u> <u>(ppm)</u>
Center of barren area (1 foot composite sample)	11,428	6.49	7,702					
				<u>Composite:</u>				
				250	12	400	560	11,150-
Center of barren area (18" layer)	7,425	5.58	8,259					
Northeast corner of barren area* (15" layer)	6,563	8.51	5,195					
South side of barren area (11" layer)	20,558	5.74	503	900	2	135	104	455
Surface scraping on an east-west transect across site	11,262	6.55						

ppm = parts per million

*The ground gave way under the weight of a person. Groundwater encountered
at 15".

Chemical Analyses of Water Samples Collected August 14, 1984 From a Site
Previously Leased to Larry Landry in Intracoastal City for Disposal of Waste

<u>Location</u>	<u>Salt</u> <u>(ppm)</u>	<u>pH</u>	<u>Oil & Grease</u> <u>(ppm)</u>	<u>Barium</u> <u>(ppm)</u>	<u>Cadmium</u> <u>(ppm)</u>	<u>Chromium</u> <u>(ppm)</u>	<u>Lead</u> <u>(ppm)</u>	<u>Zinc</u> <u>(ppm)</u>
Groundwater from north- east corner of barren area (15" deep)	11,766	8.51	3,275	1,950	4	227	133	276
Surface water from small surface sump area on southwest side of barren area	5,528	6.98	37	1.3	N.D.	N.D.	N.D.	N.D.
Surface water from marsh at southeast corner of site	652	6.60						

N.D. = None Detected

ppm = parts per million

Chemical Analyses of Waste Samples Collected August 18, 1984 From a Site
Previously Leased to Larry Landry in Intracoastal City for Disposal of Waste

<u>Sample</u>	<u>Salt</u> <u>(ppm)</u>	<u>pH</u>	<u>Oil and Grease</u> <u>(ppm)</u>
Rainwater collected in drum containing solidified black tar-like material	248	7.47	47
Sample of ground saturated with black tar-like material	3,870	5.44	
Sample of solidified black tar-like material	1,892	4.23	

ppm = parts per million



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6

1445 ROSS AVENUE, SUITE 1200

DALLAS, TEXAS 75202-2733

November 21, 1989

MEMORANDUM

SUBJECT: Sole Source Aquifers

FROM: Deborah A. Vaughn-Wright *DW*
Region 6 NPL Coordinator
Superfund Site Assessment Section (6H-MA)TO: Ed Sierra
FIT RPO
Surveillance Hazardous Waste Section (6E-SH)

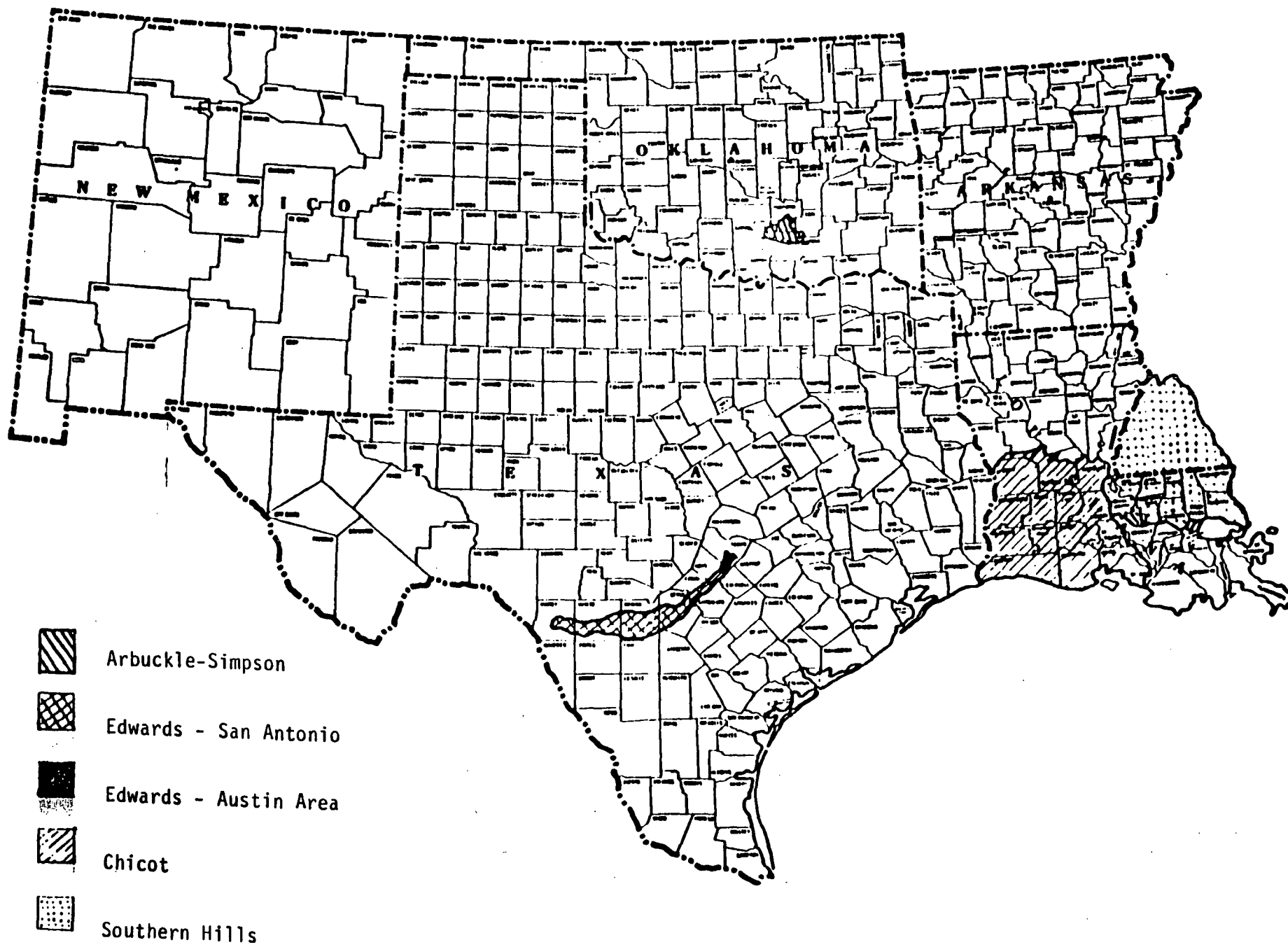
Please provide the FIT with these maps showing the Sole Source Aquifers in Region 6. If the FIT ever have any questions about Sole Source Aquifers they may contact Clay Chesney at (214) 655-6446.

RECEIVED
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EPA REGION VI

Sole Source Aquifers



DESIGNATED SOLE SOURCE AQUIFERS - NATIONALLY

Federal Register Notice

<u>Region</u>	<u>Map Number</u>	<u>Aquifer and/or Location</u>	<u>State</u>	<u>Date Filed</u>	<u>Citation</u>	<u>Publication Date</u>
VI	1.	Edwards Aquifer	TX	1/03/75	40 FR 58344	12/16/75
X	2.	Spokane-Valley Rathdrum Prairie Aquifer	WA-ID	fall of '76	43 FR 5566	02/09/78
IX	3.	Northern Guam	Guam	11/20/75	43 FR 17868	04/26/78
II	4.	Nassau/Suffolk Counties Long Island	NY	1/21/75	43 FR 26611	06/21/78
IX	5.	Fresno County	CA	8/09/76	44 FR 52751	09/10/79
IV	6.	Biscayne Aquifer	FL	5/08/78	44 FR 58797	10/11/79
II	7.	Buried Valley Aquifer System	NJ	1/15/79	45 FR 30537	05/08/80
III	8.	Maryland Piedmont Aquifer Montgomery, Frederick, Howard, Carroll Counties	MD	09/12/75	45 FR 57165	08/27/80
X	9.	Camano Island Aquifer	WA	4/13/81	47 FR 14779	04/06/82
X	10.	Whidbey Island Aquifer	WA	4/13/81	47 FR 14779	04/06/82
I	11.	Cape Code Aquifer	MA	3/04/81	47 FR 30282	07/13/82
II	12.	Kings/Queens Counties	NY	6/18/79	49 FR 2950	01/24/84
II	13.	Ridgewood Area	NY/NJ	7/04/79	49 FR 2943	01/24/84
II	14.	Upper Rockaway River Basin Area	NJ	11/30/79	49 FR 2946	01/24/84
IX	15.	Upper Santa Cruz & Avra Altar Basin Aquifers	AZ	6/29/81	49 FR 2948	01/24/84

DESIGNATED SOLE SOURCE AQUIFERS - NATIONALLYFederal Register Notice

<u>Region</u>	<u>Map Number</u>	<u>Aquifer and/or Location</u>	<u>State</u>	<u>Date Filed</u>	<u>Citation</u>	<u>Publication Date</u>
I	16.	Nantucket Island Aquifer	MA	12/02/82	49 FR 2952	01/24/84
I	17.	Block Island Aquifer	RI	3/18/83	49 FR 2952	01/24/84
II	18.	Schenectady/Niskayuna Schenectady, Saratoga and Albany Counties	NY	8/20/82	50 FR 2022	01/14/85
IX	19.	Santa Margarita Aquifer Scotts Valley, Santa Cruz County	CA	9/07/77	50 FR 2023	01/14/85
II	20.	Clinton Street- Ballpark Valley, Aquifer System, Broome and Tioga Counties	NY	2/26/81	50 FR2025	01/14/85
III	21.	Seven Valleys Aquifer York County	PA	9/24/81	50 FR 9126	03/06/85
X	22.	Cross Valley Aquifer	WA	7/29/83	52 FR 18606	05/18/87
III	23.	Prospect Hill Aquifer Clark County	VA	6/27/85	52 FR 21733	06/09/87
V	24.	Pleasant City Aquifer	OH	8/27/84	52 FR 32342	08/27/87
II	25.	Cattaraugus Creek-Sardinia	NY	2/28/85	52 FR 36100	09/25/87
V	26.	Bass Island Aquifer Catawba Island	OH	3/17/86	52 FR 37009	10/02/87
X	27.	Newberg Area Aquifer	WA	1/16/84	52 FR 37215	10/05/87

DESIGNATED SOLE SOURCE AQUIFERS - NATIONALLYFederal Register Notice

<u>Region</u>	<u>Map Number</u>	<u>Aquifer and/or Location</u>	<u>State</u>	<u>Date Filed</u>	<u>Citation</u>	<u>Publication Date</u>
II	28.	Highlands Aquifer System	NY/NJ	3/14/85	52 FR 37213	10/05/87
X	29.	North Florance-Dunal Aquifer	OR	6/02/85	52 FR 37519	10/07/87
IV	30.	Volusia-Floridan Aquifer	FL	6/18/82	52 FR 44221	11/18/87
IX	31.	Southern Oahu Basal Aquifer	HI	5/16/84	52 FR 45496	11/30/87
I	32.	Martha's Vineyard Regional Aquifer	MA	6/16/87	53 FR 3451	02/05/88
V	33.	Buried Valley Aquifer System (BVAS)	OH	3/04/87	53 FR 15876	05/04/88
I	34.	Pawcatuck Basin Aquifer System	RI/CT	12/22/87	53 FR 17108	05/13/88
I	35.	Hunt-Annaquatucket-Pettaquamscutt Aquifer System	RI	12/30/87	53 FR 19026	05/26/88
VI	36.	Chicot Aquifer	LA	12/15/86	53 FR 20893	06/09/88
VI	37.	Edwards Aquifer Austin Area	TX	11/25/86	53 FR 20897	06/07/88
VIII	38.	Missoula Valley Aquifer	MT	11/30/87	53 FR 20895	06/07/88
II	39.	Cortland- Homer-Preble Aquifer System	NY	9/21/87	53 FR 22045	06/13/88
V	40.	St. Joseph Aquifer System (Elkart Co)	IN	12/16/87	53 FR 23682	06/23/88
II	41.	N.J. Fifteen Basin Aquifer Systems	NJ/NY	11/18/85	53 FR 23685	06/23/88

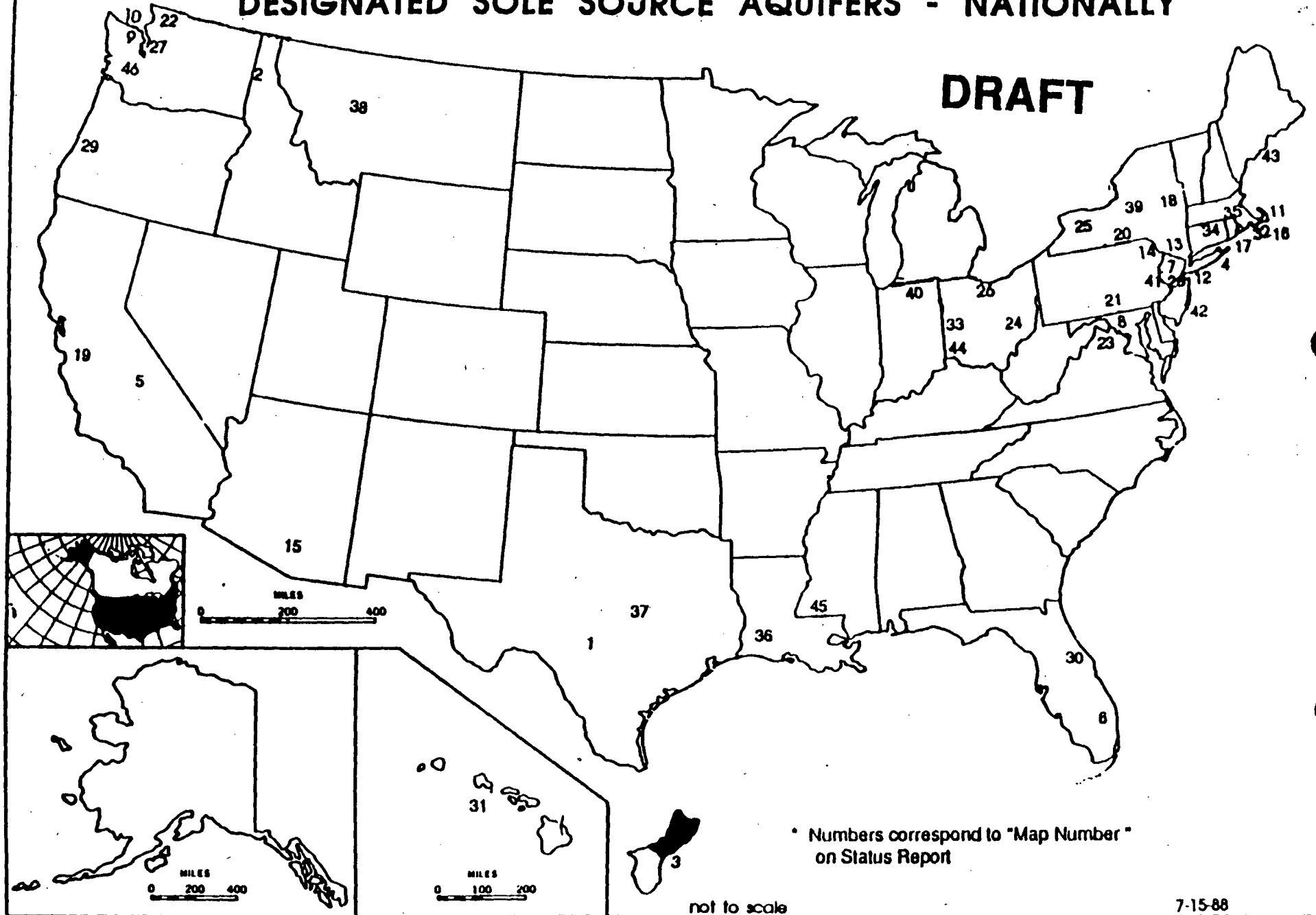
STATUS AS OF 7/15/88

DESIGNATED SOLE SOURCE AQUIFERS - NATIONALLYFederal Register Notice

<u>Region</u>	<u>Map Number</u>	<u>Aquifer and/or Location</u>	<u>State</u>	<u>Date Filed</u>	<u>Citation</u>	<u>Publication Date</u>
II	42.	N.J. Coastal Plain Aquifer	NJ	12/04/78	53 FR 23791	06/24/88
I	43.	Monhegan Island	ME	5/16/88	53 FR 24496	06/29/88
V	44.	OKI - Miami Buried Valley Aquifer	OH	03/10/88	53 FR 25670	07/08/88
VI	45.	Southern Hills Aquifer System	LA/MS	5/19/80	53 FR 25538	07/07/88
X	46.	Cedar Valley, Renton Aquifer	WA	1/88		

DESIGNATED SOLE SOURCE AQUIFERS - NATIONALLY

DRAFT



REFERENCE: 9

INITIAL DRAFT

LOUISIANA WATER CONTROL REGULATIONS

DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF WATER RESOURCES

MARCH 9, 1984

This public document was published at a total cost of \$1200.00. 200 copies of this document were published in this first printing at a cost of \$150.00. The total cost of all printings of this document, including reprints, is \$1200.00. This document was published by the Louisiana Department of Environmental Quality, Post Office Box 44066, Baton Rouge, Louisiana 70804, to develop water control regulations under authority of the Louisiana Environmental Quality Act, L.R.S. 30:1094 et seq. This material was printed in accordance with standards for printing by State Agencies established pursuant to R.S. 43:31.

Chapter 6. WATER QUALITY STANDARDS

Bacterial Criteria (BAC)

1. Primary Contact Recreation
2. Secondary Contact Recreation
3. Public Water Supply
4. Shellfish Propagation

Designated Water Uses

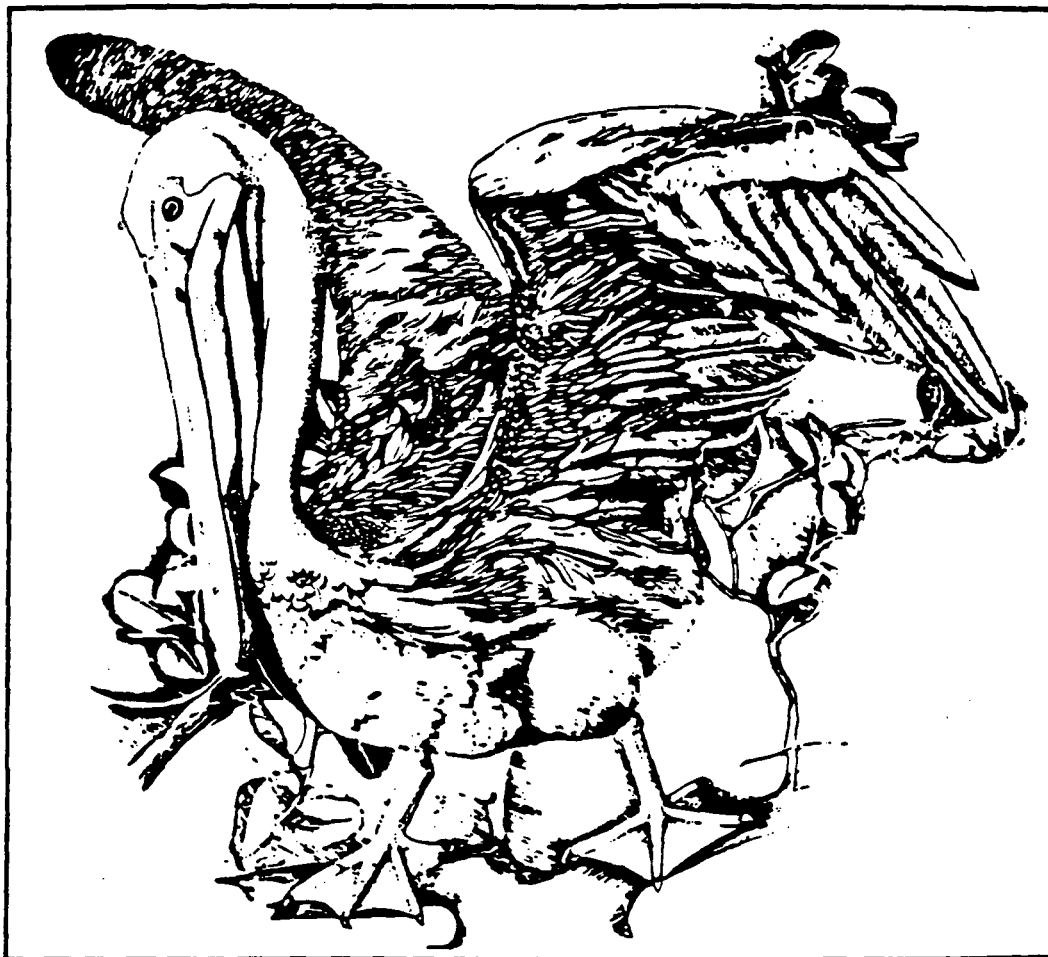
- A. Primary Contact Recreation
- B. Secondary Contact Recreation
- C. Propagation of Fish and Wildlife
- D. Public Water Supply
- E. Shellfish Propagation
- F. Agriculture
- G. Outstanding Natural Resource Waters

BASIN VERMILION-TECHE RIVER (06)

AGENCY ID	STREAM DESCRIPTION	DESIGNATED WATER USES						
		A	B	C	D	E	F	G
060010	Vermilion River - Headwaters to Intracoastal Waterway	X	X	X			X	
060020	Vermilion River - Intracoastal Waterway to Vermilion Bay (Estuarine)	X	X	X				
060030	Freshwater Bayou Canal - Intracoastal Waterway to Control Structure (Estuarine)	X	X	X				
060040	Bayou Petite Anse - Headwaters to Bayou Carlin (Estuarine)	X	X	X				
060050	Bayou Carlin (Delcambre Canal) - Lake Peigneur to Bayou Petite Anse (Estuarine)	X	X	X				
060060	Bayou Tigre - Headwaters to Bayou Petite Anse (Estuarine)	X	X	X				
060070	Bayou Petite Anse - Bayou Carlin to Vermilion Bay (Estuarine)		X	X				
060080	Lake Peigneur (Estuarine)	X	X	X				
060090	Indian Creek and Indian Creek Reservoir	X	X	X	X			
060100	Cocodrie Lake	X	X	X				
060110	Spring Creek - Headwaters to Cocodrie Lake (Scenic)	X	X	X				X
060120	Bayou Cocodrie - from U. S. Hwy. 167 to the Bayou Boeuf - Cocodrie Diversion Canal - Bayou Boeuf and Bayou Courtableau (Headwaters of Bayou Teche to Interstate 10 (Scenic)	X	X	X				X

QL
88
L8

THREATENED AND ENDANGERED
ANIMALS OF LOUISIANA

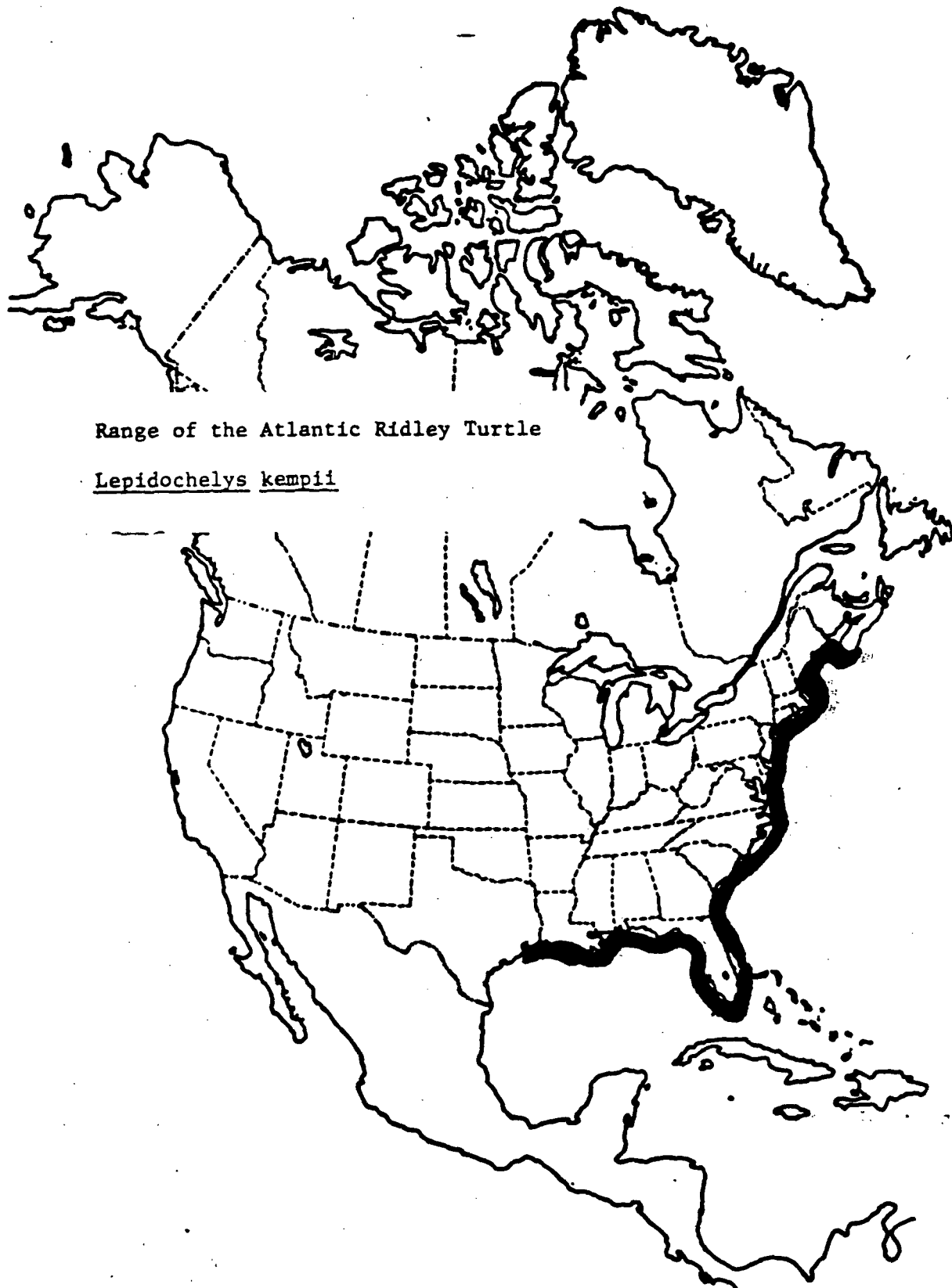


SARA SMITH

"BROWN PELICAN" ©

Compiled by M.B. Watson
Louisiana Department of Wildlife and Fisheries

1981

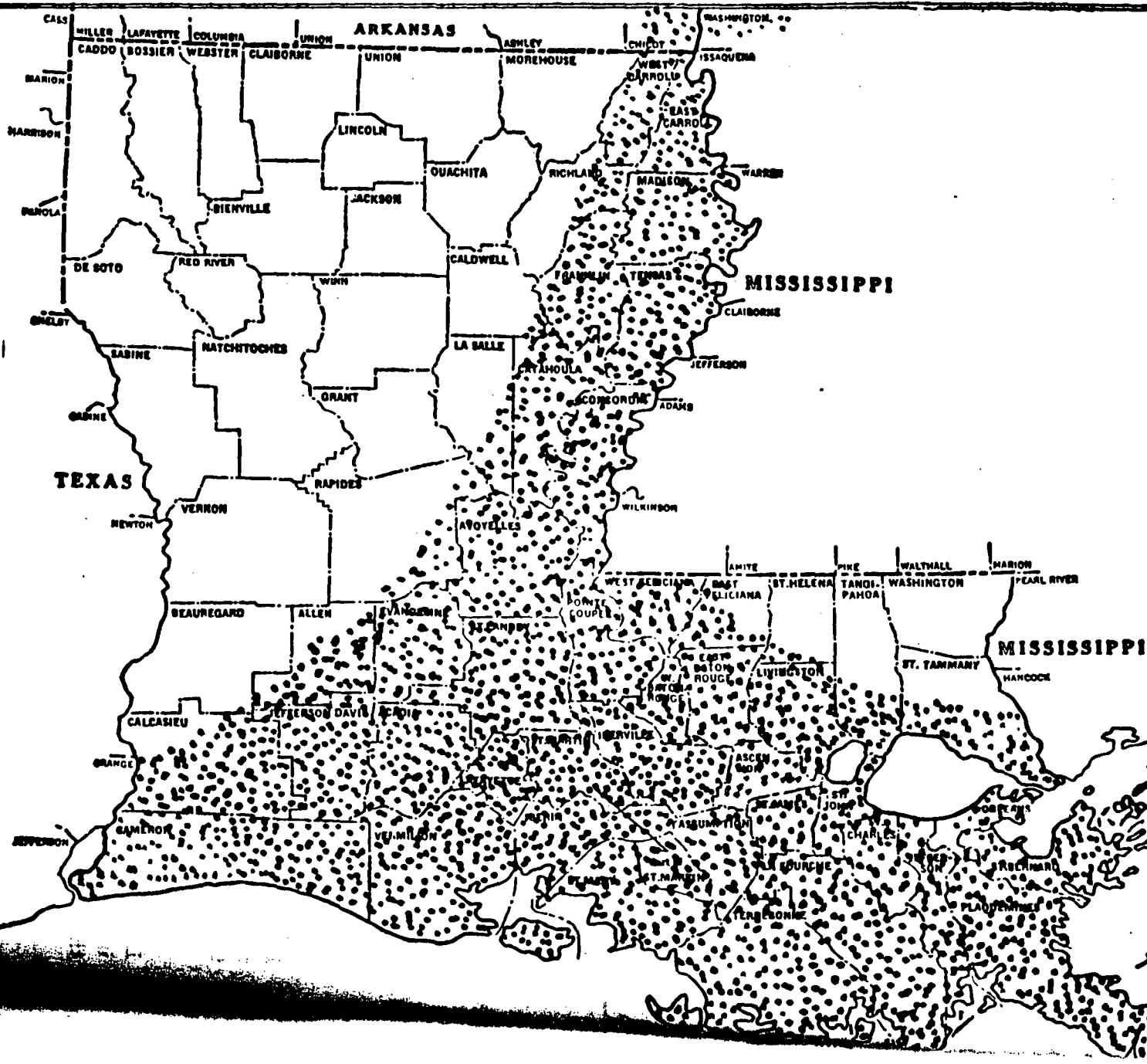


THREATENED AND ENDANGERED SPECIES OF LOUISIANA

Common Name	Scientific Name	Status ¹
Panther, Florida	<u>Felis concolor coryi</u>	E
Wolf, Red	<u>Canis rufus</u>	E
Whale, Black Right	<u>Eubalaena glacialis</u>	E
Whale, Sei	<u>Balaenoptera borealis</u>	E
Whale, Giant Sperm	<u>Physeter catodon</u>	E
Seal, Caribbean Monk	<u>Monachus tropicalis</u>	E
Crane, Whooping	<u>Grus americana</u>	E
Eagle, Bald	<u>Haliaeetus leucocephalus</u>	E
Falcon, American Peregrine	<u>Falco peregrinus anatum</u>	E
Falcon, Arctic Peregrine	<u>Falco peregrinus tundrius</u>	E
Pelican, Brown	<u>Pelecanus occidentalis</u>	E
Warbler, Bachmans	<u>Vermivora bachmanii</u>	E
Woodpecker, Ivory-billed	<u>Campephilus principalis</u>	E
Woodpecker, Red-cockaded	<u>Picoides (=Dendrocopos) borealis</u>	E
Alligator, American	<u>Alligator mississippiensis</u>	E, T, T(s/a)
Turtle, Atlantic ridley	<u>Lepidochelys kempii</u>	E
Turtle, Green Sea	<u>Chelonia mydas</u>	T
Turtle, Hawks	<u>Eretmochelys imbricata</u>	E
Turtle, Loggerhead Sea	<u>Caretta caretta</u>	T
Turtle, Leatherback	<u>Dermochelys coriacea</u>	E

1. E = Endangered, T = Threatened, T(s/a) = Threatened, similar in appearance to an endangered species, but not endangered in the area of occurrence.

Peregrine falcon overwintering areas in Louisiana, 1980.





PEREGRINE FALCON
Falco peregrinus anatum
F. p. tundrius

The peregrine falcon is the famous "duck hawk" and has become rare in the U.S. due to chlorinated hydrocarbon contamination in the aquatic environment.

DESCRIPTION: The head of the Peregrine Falcon is black with heavy moustachial stripes. The upper body is slate-blue barred with dark brown. The primary feathers are dark brown, but the tail feathers are barred like the back tipped with light yellow-brown. The throat and belly are white to sienna-orange with narrow stripes on the chest and dark brown bars on the belly and flanks. The beak is slate-blue with a yellow cere, the eyes are dark brown and the feet and legs are yellow to greenish-yellow with black claws. The birds range in size from 13-19 inches. The females are much larger than the male.

PREFERRED HABITAT: The species in Louisiana is likely to be found only near the Gulf. The preferred habitat of the Peregrine is rocky ledges, however they will nest in trees in flat terrain. There are no breeding Peregrines in Louisiana.

FOOD HABITS: The Peregrine falcon feeds primarily on other birds. They usually hunt their prey in the air and kill by diving on the flying bird striking it with their talons. They then catch the dead bird in air or follow it to the ground where they break the neck of its prey. Primary prey are bluejays, flickers, meadowlarks and pigeons. As indicated above, the falcon will also take ducks. The falcon's eyes are placed so it can see straight ahead, to the sides, or below.

LIFE HISTORY: Falcons usually are sexually mature at three years. After mating, the eggs are laid in clutches of four usually in late March and April. Incubation last about 33 days. The female does most of the incubating while the male hunts.

The Falcons prefer high places such as cliffs to build their nests, but they will utilize buildings in areas where there are abundant pigeon populations.



ATLANTIC RIDLEY TURTLE

Lepidochelys kempii

The Atlantic ridley is the smallest of the Atlantic sea turtles. If captured it becomes hysterical and will often die without apparent cause. The ridley has been used for food and probably still is in places where environmental consciousness is low or where environmental law is flagrantly ignored. This comment holds for all sea turtles.

DESCRIPTION: The Atlantic ridley is our only sea turtle with an almost circular carapace which is from 23 to 27 1/2 inches long. Adult ridleys weigh between 80-100 pounds. The turtle is olive green above and yellow on the underside. The ridley has 5 costal scutes (plates on the shell) with 4 enlarged scutes underneath along the margin on the bridge. It also has a small internal scute at the caudal (tail) end.

PREFERRED HABITAT AND RANGE: The optimum habitat of the Atlantic ridley appears to be shallow water, associated with red mangrove. Its range is chiefly in the Gulf of Mexico occasionally appearing along the Atlantic coast as far north as Nova Scotia in summer.

FOOD HABITS: Based upon stomach analysis the only food taken by the turtle is crabs although it is likely that other food is taken.

LIFE HISTORY: Very little is known about the ridley except that it apparently lays its eggs in the Florida keys during the three winter months.

RECORD OF COMMUNICATION	(Record of Item Checked Below) <input checked="" type="checkbox"/> Phone Call <input type="checkbox"/> Discussion <input type="checkbox"/> Field Trip <input type="checkbox"/> Conference <input type="checkbox"/> Other(Specify)	
To: Mark Shirley Louisiana Cooperative Extension Service Associate County Specialist, Fishery Resources	From: Kurt Soutendijk <i>KS</i> FIT Chemist	Date: 4-4-90
		Time: 8:45 am
SUBJECT: New Forked Island Shipyard (LAD985170158)		
SUMMARY OF COMMUNICATION		
In Vermillion Parish, the average crawfish farm produces 600 to 800		
pounds per year per acre, but can produce as much as 1,500 to 2,000		
pounds per year per acre. The majority of the farms use surface		
water to flood the fields and the water comes from Canals. The canals		
usually are connected to the Intercoastal Waterway. Only a limited		
number of farms use deep water wells to flood the fields.		
CONCLUSIONS, ACTION TAKEN OR REQUIRED		
INFORMATION COPIES TO:		

RECORD OF COMMUNICATION	(Record of Item Checked Below) <input checked="" type="checkbox"/> Phone Call <input type="checkbox"/> Discussion <input type="checkbox"/> Field Trip <input type="checkbox"/> Conference <input type="checkbox"/> Other(Specify)	
	To: Charles Stores Regional Wetland Coordinator, U. S. Fish and Wildlife Service	From: Marcus A. Pinzel FIT Geologist <i>[Signature]</i> Date: 9/19/91 Time: 10:00 a.m.
SUBJECT: Wetlands Along Vermilion River in Vermilion Parish Near LLD		
SUMMARY OF COMMUNICATION		
Q - Are there areas of wetlands along the rivers and canals in or near Intercoastal City?		
A - There are no wetland maps of the area, but the areas around the Vermilion River and the local canals meet the criteria set by the EPA for wetlands.		
CONCLUSIONS, ACTION TAKEN OR REQUIRED		
INFORMATION COPIES TO:		

RECORD OF COMMUNICATION	(Record of Item Checked Below) <input checked="" type="checkbox"/> Phone Call <input type="checkbox"/> Discussion <input type="checkbox"/> Field Trip <input type="checkbox"/> Conference <input type="checkbox"/> Other(Specify)	
	To: L. J. Danton Hydro Technician, U.S. Geological Survey, Baton Rouge, LA	From: Raymond Wayne FIT Hydrologist <i>Raymond Wayne</i>
	Date: 7/14/88	Time: 2:35 p.m.
SUBJECT: Vermilion River Flow Direction		
SUMMARY OF COMMUNICATION		
-The Vermilion River flows west (regional flow to the south) where runoff from the Coulee Crow enters the river.		
-There is a reversal of river flow direction in the Vermilion River.		
The furthest upstream record of flow reversal is at the Surrey Street measuring location in Lafayette. Reversal caused by storms, tidal effects, wind, etc.		
CONCLUSIONS, ACTION TAKEN OR REQUIRED		
INFORMATION COPIES TO:		